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Subject:

The AVN-Based Statistical Guidance Message

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FIRST BULLETIN ON THIS SUBJECT

This Technical Procedure Bulletin (TPB), written by John Jensenius, Jr., J. Paul Dallavalle, and Stephen Gilbert, of the Techniques Development Laborotory, describes the Aviation Model (AVN)-Based statisitical weather forecast message, which will be implemented August 31, 1994. Forecasts are available for stations in the contiguous United States and in Alaska.

Included in the guidance are daily forecasts (through 72-hours) of daytime maximum and nighttime minimum temperature, proabability of precipitation (PoP) for 12 hour periods, conditional probability of snow for 12-hour periods, and mean opaque cloudiness for 12-hour periods. This guidance will be prepared twice daily for the 0000 and 12000 UTC forecast cycles.

A sample message for the future Weather Service Forecast Office in Albany, New York (WFO ALY), based on the 0000 UTC cycle on December 8, 1991, is used throughout the TPB to discuss the various forecast elements in detail. Each section begins with the portion of the message being discussed, preceded by the message heading, to enhance readability. A double-sided blue reference card for these messages is included with the TPB.

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THE AVN-BASED STATISTICAL GUIDANCE MESSAGE

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1. INTRODUCTION

On August 31, 1994, the Techniques Development Laboratory (TDL) of the National Weather Service (NWS) expects to implement a new statistical weather forecast system to produce objective guidance for projections out to 72 hours. These statistical forecasts are based on output from the National Meteorological Center's (NMC's) Aviation (AVN) run of the Global Spectral model (Kanamitsu, 1989). Included in the guidance are forecasts of the daytime maximum (max) and nighttime minimum (min) temperature, the probability of precipitation (PoP) for 12-periods, the conditional probability of snow (CPOS) for 12-h periods (conditional on precipitation occurring), and the mean opaque cloudiness for 12-h periods. Guidance is available for each 12-h period between 12 and 72 hours after both 0000 and 1200 UTC. The forecasts are disseminated in alphanumeric messages and are distributed under many different bulletin headers (see Appendix). For NWS AFOS users, the guidance for the contiguous U.S. is distributed under the FAN category. For other users, bulletins for the NWS Eastern Region are distributed under the World Meteorological Organization (WMO) header of FEXEnn KWBC; bulletins for the NWS Central Region are distributed under the header of FEXCnn KWBC; bulletins for the NWS Southern Region are distributed under the header of FEXSnn KWBC; and bulletins for the NWS Western Region are distributed under the header of FEXWnn KWBC. The "nn" in these bulletin headers represents a number assigned to various collectives of stations. For Alaska, the AVN-based objective guidance is transmitted in the FEAK20 KWBC message; this product is not available on AFOS.

The forecasts contained in the messages are generated by applying statistical equations to output from the AVN run of the Global Spectral model. Various techniques were used in developing these statistical equations. At the time this Technical Procedures Bulletin (TPB) was written, all equations except for the PoP equations were developed with a Model Output Statistics (MOS) approach; the PoP equations were derived with a perfect prog approach. We expect to replace the perfect prog PoP equations with MOS equations during the next year. These techniques will be discussed in greater detail in a forthcoming TPB. All of the forecasts contained in the messages are passed through a calibration procedure that minimizes the mean square error of the forecasts based on previous verification data. This procedure makes the forecasts tend toward normal climatic conditions as the skill of the objective guidance tends to decrease. The calibration procedure also removes the systematic biases detected in the sample verification. The procedure generally has only a small effect on forecasts produced from equations that were derived with the MOS approach, since the MOS technique already has minimized the mean squared error, removed systematic biases, and tended the forecasts toward the climatic mean value from the developmental sample. However, if the model has changed significantly and the calibration sample is more recent than the developmental sample or if the developmental sample is on the average significantly different from the climatic normal for the same period, then the calibration procedure will provide a more significant adjustment.

Note that for the 0000 UTC cycle, the equations used to produce the AVN-based objective guidance are the same as those used to produce statistical weather guidance from the 0000 UTC Medium Range Forecast (MRF) model (Jensenius et al., 1993). For the 1200 UTC cycle, the techniques used to the derive the equations are similar to those used to derive the equations for the 0000 UTC cycle. Also note that the horizontal resolution of the AVN model data used to generate the forecasts is less than that used for TDL's NGM-based MOS guidance (Dallavalle et al., 1992). Consequently, the AVN-based guidance will likely be less responsive to small-scale features than the NGM-based guidance.

For stations in the contiguous United States, forecasts of the conditional probability of snow (CPoS) will be issued only from September 16 through May 15; however, CPoS forecasts will never be available for certain stations in California and Florida where snow is very rare. For stations in Alaska, CPoS forecasts will be issued from September 1 through May 31. Due to a lack of either developmental or climatic data, the messages for some stations do not contain forecasts for all weather elements and/or projections.

2. MESSAGE FORMAT

The AVN-based forecasts are distributed in a series of bulletins. Each bulletin contains the stations included in the area of responsibility for one future "modernized" National Weather Service Weather Forecast Office (WFO). A separate bulletin is sent for each WFO. Figures 1 and 2 show sample 0000 UTC and 1200 UTC AVN-based objective forecast messages, respectively, for the Albany, New York, Weather Forecast Office (WFO ALY). These messages contain guidance for only one station; namely, the Albany County Airport (station ALB). The number of stations included in each FEXynn bulletin varies according to the forecast area. In the discussion to follow, we will use the 0000 UTC FANALY/FEXE40 KWBC message as an example. The guidance for other WFOs is disseminated under different WMO bulletin headers (see the Appendix).

A summary of the message format is given in the last two pages of the Appendix. This summary is also being distributed to TPB subscribers as a detached blue reference card.

a. Message Heading

```
NMCFANALY
FEXE40 KWBC 080000
AVN-BASED OBJECTIVE GUIDANCE   12/08/91   0000 UTC
ALB    SUN 08| MON 09| TUE 10
```

The message heading shown above (see Figure 1 also) gives the AFOS product identifier for the collective (AFOS users only) [line 1], the WMO header assigned to the collective and the bulletin creation date and cycle time [line 2], the message content identifier and the forecast date and cycle time [line 3], and the station for which the guidance is valid followed by the valid day of the week and day of the month (based on UTC) for each group of forecasts [line 4].

For AFOS users, the first three lines appear at the beginning of each collective, and the fourth line appears for each station in the collective. For non-AFOS users, only the second and third lines appear at the start of each message, and the fourth line appears once for each station in the collective.

```
NMCFANALY
FEXE40 KWBC 080000
AVN-BASED OBJECTIVE GUIDANCE   12/08/91   0000 UTC
ALB    SUN 08| MON 09| TUE 10
MN/MX      49| 34  45| 24  27
POP12      32| 69 100| 67  58
CPOS        0|  2  29| 75  99
CLDS       62| 76  97| 97  88
```

Figure 1. Sample 0000 UTC FANALY/FEXE40 KWBC message for the Albany, New York, Weather Forecast Office (ALY). This message is used in the line-by-line explanation given in Section 2.

```
NMCFANALY
FEXE40 KWBC 081200
AVN-BASED OBJECTIVE GUIDANCE  12/08/91  1200 UTC
ALB     MON 09| TUE 10| WED 11
MN/MX   34  45| 24  27|  2
POP12   69 100| 67  58| 21
CPOS     2  29| 75  99|100
CLDS    76  97| 97  88| 52
```

Figure 2. Same as Figure 1, except for 1200 UTC message.

In this example, the AFOS product identifier [line 1] indicates that the collective is for stations in the area of responsibility for WFO Albany (ALY). The second line gives the WMO header (FEXE40 KWBC) for the Albany collective and indicates that the bulletin was created on the 8th day of the month during the 0000 UTC cycle. The third line gives the initial date (12/08/91) and the forecast cycle (0000 UTC) of the model data on which the guidance was based. The fourth line gives the station (ALB) for which the guidance is valid, and the valid days for each set of forecasts. Note that the valid day of the week is indicated by a three letter abbreviation.

The days in line 4 of the heading are in terms of UTC days and all forecasts, with the exception of the min/max temperatures, are valid for periods defined with respect to UTC. The min/max temperature forecasts are valid for nighttime and daytime periods, respectively, based on local standard time. Consequently, forecast values for the 0000-1200 UTC period and for the minimum temperature actually span two local calendar dates.

b. MN/MX - Minimum/Maximum Temperature Forecasts

```
NMCFANALY
FEXE40 KWBC 080000
AVN-BASED OBJECTIVE GUIDANCE  12/08/91  0000 UTC
ALB     SUN 08| MON 09| TUE 10
MN/MX      49| 34  45| 24  27
```

This row of forecasts is labeled "MN/MX" to indicate that the forecasts between any two date separators (| |) are the minimum and maximum surface temperatures, respectively, expected for the nighttime and daytime periods ending during that date. Forecast values in the message are in whole degrees Fahrenheit (°F), and three characters are allowed. Missing values are indicated by 999. Although each column gives the minimum temperature followed by the maximum temperature, note that in the 0000 UTC message the first temperature forecast appearing in the row is the maximum temperature forecast for the first day. For the 1200 UTC message, the first temperature appearing in the row is the minimum temperature forecast for the next day. In this example, the forecasts under the column labeled "MON 09" are the minimum temperature expected for the nighttime period ending Monday morning, December 9 (34°F) and the maximum temperature expected during the daytime period of Monday, December 9 (45°F). For the contiguous United States, the nighttime minimum forecasts are valid for the period from 7 pm to 8 am local standard time (LST) and that the daytime maximums are valid for the period from the 7 am to 7 pm LST. For Alaska, nighttime and daytime correspond to roughly 6 pm to 6 am LST and 6 am to 6 pm LST, respectively.

c. POP12 - Probability of Precipitation (PoP) Forecasts for a 12-h Period

```
NMCFANALY
FEXE40 KWBC 080000
AVN-BASED OBJECTIVE GUIDANCE   12/08/91   0000 GMT
ALB    SUN 08| MON 09| TUE 10
:           :   :   :   :   :
POP12      32| 69 100| 67  58
```

The line labeled "POP12" contains forecasts of the probability of 0.01 inches or more of liquid-equivalent precipitation during 12-h periods. These 12-h PoP s are valid for the 0000-1200 UTC and 1200-0000 UTC periods. In the message, the forecast probabilities are given to the nearest whole percent, ranging from 0 to 100%. A missing forecast is indicated by 999. In the sample message, for the set of forecasts labeled "MON 09," the forecast PoP for the period from 0000 UTC Monday, December 9 to 1200 UTC Monday, December 9 is 69%. The forecast for the period from 1200 UTC Monday, December 9 to 0000 UTC Tuesday, December 10 is 100%.

d. CPOS - Conditional Probability of Snow Forecasts for a 12-h Period

```
NMCFANALY
FEXE40 KWBC 080000
AVN-BASED OBJECTIVE GUIDANCE   12/08/91   0000 GMT
ALB    SUN 08| MON 09| TUE 10
:           :   :   :   :   :
CPOS        0|  2  29| 75  99
```

The line labeled "CPOS" gives the conditional probability of snow--conditional on the occurrence of a "significant precipitation event" during the 12-h period. These 12-h CPoS forecasts are valid for the 0000-1200 UTC and 1200-0000 UTC periods. In the development of the forecast equations, "significant precipitation events" were defined as those in which (1) precipitation was reported in at least two of the five 3-hourly observations that span the forecast period, and (2) precipitation was observed in two reports separated by at least 6 hours. For those 12-h periods that met the criteria, the predictand was set to 1 if only snow occurred and 0 if only rain occurred. If any mixture of snow and rain occurred during the period, or if any form of transitional precipitation (freezing precipitation, ice pellets, or mixed precipitation) occurred, the predictand took on a value between 0 and 1. This will be discussed in greater detail in a forthcoming TPB. In the forecast message, the conditional probabilities are given to the nearest whole percent, ranging from 0 to 100%. A missing forecast is indicated by 999. In the sample message, for the set of forecasts labeled "MON 09," the forecast CPoS for the period from 0000 UTC Monday, December 9 to 1200 UTC Monday, December 9 is 2%. The forecast for the period from 1200 UTC Monday, December 9 to 0000 UTC Tuesday, December 10 is 29%.

e. CLDS - Mean Opaque Cloudiness Forecasts for a 12-h Period

```
NMCFANALY
FEXE40 KWBC 080000
AVN-BASED OBJECTIVE GUIDANCE   12/08/91   0000 GMT
ALB    SUN 08| MON 09| TUE 10
:           :   :   :   :   :
CLDS       62| 76  97| 97  88
```

The line labeled "CLDS" contains forecasts of mean opaque cloudiness (in percent) for the 0000 to 1200 and 1200 to 0000 UTC periods. A missing forecast is indicated by 999. In this example, for the set of forecasts labeled "MON 09," the forecast opaque cloudiness is 76% for the 12-h period from 0000 UTC Monday, December 9 to 1200 UTC Monday, December 9, and 97% for the 12-h period from 1200 UTC Monday, December 9 to 0000 UTC Tuesday, December 10.

3. AVAILABILITY

The AVN-based objective forecast messages are generated twice daily at around 0600 and 1800 UTC. The guidance may be delayed substantially, however, if problems occur in NMC's production suite and the completion of the AVN model is delayed. These messages are then distributed on the AFOS network and disseminated on the Family of Service's Domestic Data Service, to the Air Force's Automated Weather Network, and to the Federal Aviation Administration's Weather Message Switching Center.

At this time, AVN-based objective forecast messages are available for the stations listed in the Appendix. The Appendix also gives the bulletin headers, AFOS product identifiers, regional AFOS routings, and latitudes and longitudes for each station.

At an AFOS site, a bulletin may be displayed by typing FANxxx and pressing "ENTER" (where the xxx represents the three letter identifier of the appropriate WFO site). Note that the bulletin header is automatically included at the top of the bulletin and that the two product identification lines are included in each WFO's message.

4. REFERENCES

Dallavalle, J. P., J. S. Jensenius, Jr., and S. A. Gilbert, 1992: NGM-based MOS guidance - The FOUS14/FWC message. NWS Technical Procedures Bulletin No. 408, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 16 pp.

Jensenius, J. S., Jr., J. P. Dallavalle, and S. A. Gilbert, 1993: The MRF-based statistical guidance message. NWS Technical Procedures Bulletin No. 411, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 13 pp.

Kanamitsu, M., 1989: Description of the NMC global data assimilation and forecast system. *Wea. Forecasting*, **4**, 335-342.

TPB415 - APPENDIX

LIST OF AVN MOS STATIONS

Location identifiers, name, WMO headers, AFOS product identifiers, AFOS regional routings, latitudes, and longitudes of stations for which AVN-based statistical guidance is distributed. For the AFOS regional routings, the letters "E", "S", "C", and "W" correspond to the NWS Region(s) to which the products are transmitted on the AFOS network (Eastern, Southern, Central, and Western Region, respectively). Only stations in the contiguous U.S. are distributed on AFOS. Latitudes and longitudes are given in degrees and minutes.

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.
ABE	Allentown, PA	FEXE54 KWBC	FANPHI	E	40.39	75.26
ABI	Abilene, TX	FEXS65 KWBC	FANSJT	S	32.25	99.41
ABQ	Albuquerque, NM	FEXS40 KWBC	FANABQ	SW	35.03	106.37
ABR	Aberdeen, SD	FEXC41 KWBC	FANABR	C	45.27	98.26
ABY	Albany, GA	FEXC66 KWBC	FANTLH	EC	31.32	84.11
ACT	Waco, TX	FEXS48 KWBC	FANFWS	S	31.37	97.13
ACV	Arcata, CA	FEXW42 KWBC	FANEKA	W	40.59	124.06
ACY	Atlantic City, NJ	FEXE54 KWBC	FANPHI	E	39.27	74.34
ADQ	Kodiak, AK	FEAK20 KWBC	----------	---	57.45	152.31
AGS	Augusta, GA	FEXE45 KWBC	FANCAE	ES	33.22	81.58
AHN	Athens, GA	FEXS42 KWBC	FANFFC	ES	33.57	83.19
AKN	King Salmon, AK	FEAK20 KWBC	----------	---	58.41	156.39
ALB	Albany, NY	FEXE40 KWBC	FANALY	E	42.45	73.48
ALO	Waterloo, IA	FEXC49 KWBC	FANDMX	C	42.33	92.24
AMA	Amarillo, TX	FEXS41 KWBC	FANAMA	S	35.14	101.42
ANC	Anchorage, AK	FEAK20 KWBC	----------	---	61.10	150.01
ANN	Annette Is, AK	FEAK20 KWBC	----------	---	55.02	131.34
APN	Alpena, MI	FEXC42 KWBC	FANAPX	C	45.04	83.34
AST	Astoria, OR	FEXW54 KWBC	FANPQR	W	46.09	123.53
ATL	Atlanta, GA	FEXS42 KWBC	FANFFC	ES	33.39	84.26
AUS	Austin, TX	FEXS63 KWBC	FANEWX	S	30.18	97.42
AVL	Asheville, NC	FEXS60 KWBC	FANMRX	ECS	35.26	82.33
AVP	Scranton, PA	FEXE41 KWBC	FANBGM	E	41.20	75.44
BDL	Hartford, CT	FEXE42 KWBC	FANBOX	E	41.56	72.41
BET	Bethel, AK	FEAK20 KWBC	----------	---	60.47	161.48
BFD	Bradford, PA	FEXE59 KWBC	FANCTP	E	41.48	78.38
BFF	Scottsbluff, NE	FEXC45 KWBC	FANCYS	CW	41.52	103.36
BFL	Bakersfield, CA	FEXW44 KWBC	FANHNX	W	35.25	119.03
BGM	Binghamton, NY	FEXE41 KWBC	FANBGM	E	42.13	75.59
BGR	Bangor, ME	FEXE56 KWBC	FANGYX	E	44.48	68.49
BHM	Birmingham, AL	FEXS43 KWBC	FANBMX	S	33.34	86.45
BIG	Big Delta, AK	FEAK20 KWBC	----------	---	64.00	145.44
BIL	Billings, MT	FEXW40 KWBC	FANBIL	CW	45.48	108.32
BIS	Bismarck, ND	FEXC43 KWBC	FANBIS	CW	46.46	100.45
BKW	Beckley, WV	FEXE48 KWBC	FANRLX	ECS	37.47	81.07

LIST OF AVN MOS STATIONS (Continued)

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.
BNA	Nashville, TN	FEXS44 KWBC	FANOHX	CS	36.07	86.41
BNO	Burns, OR	FEXW41 KWBC	FANBOI	W	43.35	118.57
BOI	Boise, ID	FEXW41 KWBC	FANBOI	W	43.34	116.13
BOS	Boston, MA	FEXE42 KWBC	FANBOX	E	42.22	71.02
BRO	Brownsville, TX	FEXS45 KWBC	FANBRO	S	25.54	97.26
BRW	Barrow, AK	FEAK20 KWBC	----------	---	71.18	156.47
BTI	Barter Is, AK	FEAK20 KWBC	----------	---	70.08	143.38
BTR	Baton Rouge, LA	FEXS61 KWBC	FANLIX	S	30.32	91.09
BTT	Bettles, AK	FEAK20 KWBC	----------	---	66.55	151.31
BTV	Burlington, VT	FEXE43 KWBC	FANBTV	E	44.28	73.09
BUF	Buffalo, NY	FEXE44 KWBC	FANBUF	E	42.56	78.44
BWI	Baltimore, MD	FEXE60 KWBC	FANLWX	E	39.11	76.40
CAE	Columbia, SC	FEXE45 KWBC	FANCAE	ES	33.57	81.07
CAK	Akron-Canton, OH	FEXE47 KWBC	FANCLE	EC	40.55	81.26
CAR	Caribou, ME	FEXE56 KWBC	FANGYX	E	46.52	68.01
CDB	Cold Bay, AK	FEAK20 KWBC	----------	---	55.12	162.43
CDC	Cedar City, UT	FEXW62 KWBC	FANSLC	CW	37.42	113.06
CDV	Cordova, AK	FEAK20 KWBC	----------	---	60.30	145.30
CHA	Chattanooga, TN	FEXS60 KWBC	FANMRX	ECS	35.02	85.12
CHS	Charleston, SC	FEXE46 KWBC	FANCHS	ES	32.54	80.02
CLE	Cleveland, OH	FEXE47 KWBC	FANCLE	EC	41.24	81.51
CLT	Charlotte, NC	FEXE61 KWBC	FANGSP	ES	35.13	80.56
CMH	Columbus, OH	FEXE49 KWBC	FANILN	EC	40.00	82.53
CNK	Concordia, KS	FEXC73 KWBC	FANTOP	CS	39.33	97.39
CON	Concord, NH	FEXE56 KWBC	FANGYX	E	43.12	71.30
COS	Colo. Springs, CO	FEXC67 KWBC	FANPUB	CS	38.49	104.43
COU	Columbia, MO	FEXC72 KWBC	FANLSX	CS	38.49	92.13
CPR	Casper, WY	FEXC69 KWBC	FANRIW	CW	42.55	106.28
CRP	Corpus Christi, TX	FEXS46 KWBC	FANCRP	S	27.46	97.30
CRW	Charleston, WV	FEXE48 KWBC	FANRLX	ECS	38.22	81.36
CVG	Covington, KY	FEXE49 KWBC	FANILN	EC	39.03	84.40
CXY	Harrisburg, PA	FEXE59 KWBC	FANCTP	E	40.13	76.51
CYS	Cheyenne, WY	FEXC45 KWBC	FANCYS	CW	41.09	104.49
DAB	Daytona Beach, FL	FEXS58 KWBC	FANMLB	S	29.11	81.03
DAY	Dayton, OH	FEXE49 KWBC	FANILN	EC	39.54	84.12
DCA	Wash. National, VA	FEXE60 KWBC	FANLWX	E	38.51	77.02
DDC	Dodge City, KS	FEXC46 KWBC	FANDDC	CS	37.46	99.58
DEN	Denver, CO	FEXC47 KWBC	FANBOU	CS	39.45	104.52
DFW	Dallas-Ft.Worth, TX	FEXS48 KWBC	FANFWS	S	32.54	97.02
DLG	Dillingham, AK	FEAK20 KWBC	----------	---	59.03	158.31
DLH	Duluth, MN	FEXC48 KWBC	FANDLH	C	46.50	92.11
DRT	Del Rio, TX	FEXS63 KWBC	FANEWX	S	29.22	100.55
DSM	Des Moines, IA	FEXC49 KWBC	FANDMX	C	41.32	93.39
DTW	Detroit, MI	FEXC66 KWBC	FANDTX	EC	42.14	83.20

LIST OF AVN MOS STATIONS (Continued)

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.
EAU	Eau Claire, WI	FEXC64 KWBC	FANMPX	C	44.52	91.29
EKO	Elko, NV	FEXW43 KWBC	FANLKN	W	40.50	115.47
ELP	El Paso, TX	FEXS47 KWBC	FANEPZ	SW	31.48	106.24
ELY	Ely, NV	FEXW43 KWBC	FANLKN	W	39.17	114.51
ENA	Kenai, AK	FEAK20 KWBC	----------	---	60.34	151.15
ERI	Erie, PA	FEXE47 KWBC	FANCLE	EC	42.05	80.11
EUG	Eugene, OR	FEXW54 KWBC	FANPQR	W	44.07	123.13
EVV	Evansville, IN	FEXC59 KWBC	FANIND	EC	38.03	87.32
EWR	Newark, NJ	FEXE52 KWBC	FANOKX	E	40.42	74.10
EYW	Key West, FL	FEXS57 KWBC	FANAMX	S	24.33	81.45
FAI	Fairbanks, AK	FEAK20 KWBC	----------	---	64.49	147.52
FAR	Fargo, ND	FEXC51 KWBC	FANFGF	C	46.54	96.48
FAT	Fresno, CA	FEXW44 KWBC	FANHNX	W	36.46	119.43
FCA	Kalispell, MT	FEXW52 KWBC	FANMSO	W	48.18	114.16
FLG	Flagstaff, AZ	FEXW45 KWBC	FANFGZ	SW	35.08	111.40
FMY	Ft. Myers, FL	FEXS67 KWBC	FANTBW	S	26.35	81.52
FNT	Flint, MI	FEXC66 KWBC	FANDTX	EC	42.58	83.44
FSD	Sioux Falls, SD	FEXC52 KWBC	FANFSD	C	43.34	96.44
FSM	Fort Smith, AR	FEXS68 KWBC	FANTSA	CS	35.20	94.22
FWA	Fort Wayne, IN	FEXC59 KWBC	FANIND	EC	41.00	85.12
GEG	Spokane, WA	FEXW46 KWBC	FANOTX	W	47.38	117.32
GFK	Grand Forks, ND	FEXC51 KWBC	FANFGF	C	47.57	97.11
GGW	Glasgow, MT	FEXW47 KWBC	FANGGW	CW	48.13	106.37
GJT	Grand Junction, CO	FEXC53 KWBC	FANGJT	CSW	39.07	108.32
GKN	Gulkana, AK	FEAK20 KWBC	----------	---	62.09	145.27
GLD	Goodland, KS	FEXC54 KWBC	FANGLD	C	39.22	101.42
GRB	Green Bay, WI	FEXC55 KWBC	FANGRB	C	44.29	88.08
GRI	Grand Island, NE	FEXC56 KWBC	FANGID	C	40.58	98.19
GRR	Grand Rapids, MI	FEXC57 KWBC	FANGRR	C	42.53	85.31
GSO	Greensboro, NC	FEXE57 KWBC	FANRAH	ES	36.05	79.57
GSP	Greenville, SC	FEXE61 KWBC	FANGSP	ES	34.54	82.13
GTF	Great Falls, MT	FEXW48 KWBC	FANTFX	W	47.29	111.22
GUP	Gallup, NM	FEXS40 KWBC	FANABQ	SW	35.31	108.47
HAT	Cape Hatteras, NC	FEXE51 KWBC	FANMHX	E	35.16	75.33
HLN	Helena, MT	FEXW48 KWBC	FANTFX	W	46.36	112.00
HOM	Homer, AK	FEAK20 KWBC	----------	---	59.38	151.30
HON	Huron, SD	FEXC52 KWBC	FANFSD	C	44.23	98.13
HQM	Hoquiam, WA	FEXW60 KWBC	FANSEW	W	46.58	123.58
HSV	Huntsville, AL	FEXS43 KWBC	FANBMX	S	34.39	86.46
HTS	Huntington, WV	FEXE48 KWBC	FANRLX	ECS	38.22	82.33
HVR	Havre, MT	FEXW48 KWBC	FANTFX	W	48.33	109.46
IAD	Wash. Dulles, VA	FEXE60 KWBC	FANLWX	E	38.57	77.27
IAH	Houston, TX	FEXS49 KWBC	FANHGX	S	29.58	95.21
ICT	Wichita, KS	FEXC58 KWBC	FANICT	CS	37.39	97.25

LIST OF AVN MOS STATIONS (Continued)

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.
ILG	Wilmington, DE	FEXE54 KWBC	FANPHI	E	39.40	75.36
ILM	Wilmington, NC	FEXE50 KWBC	FANILM	ES	34.16	77.55
IND	Indianapolis, IN	FEXC59 KWBC	FANIND	EC	39.44	86.17
INL	Intl. Falls, MN	FEXC48 KWBC	FANDLH	C	48.34	93.23
IPT	Williamsport, PA	FEXE59 KWBC	FANCTP	E	41.15	76.55
ISN	Williston, ND	FEXC43 KWBC	FANBIS	CW	48.11	103.38
JAN	Jackson, MS	FEXS50 KWBC	FANJAN	S	32.19	90.05
JAX	Jacksonville, FL	FEXS51 KWBC	FANJAX	ES	30.30	81.42
JFK	NYC Kennedy, NY	FEXE52 KWBC	FANOKX	E	40.39	73.47
JNU	Juneau, AK	FEAK20 KWBC	----------	---	58.22	134.35
KTN	Ketchikan, AK	FEAK20 KWBC	----------	---	55.21	131.42
LAN	Lansing, MI	FEXC57 KWBC	FANGRR	C	42.47	84.36
LAS	Las Vegas, NV	FEXW49 KWBC	FANVEF	W	36.05	115.10
LAX	Los Angeles, CA	FEXW50 KWBC	FANLOX	W	33.56	118.24
LBB	Lubbock, TX	FEXS52 KWBC	FANLUB	S	33.39	101.49
LBF	North Platte, NE	FEXC60 KWBC	FANLBF	C	41.08	100.41
LCH	Lake Charles, LA	FEXS53 KWBC	FANLCH	S	30.07	93.13
LEX	Lexington, KY	FEXC70 KWBC	FANLMK	ECS	38.02	84.36
LFK	Lufkin, TX	FEXS64 KWBC	FANSHV	S	31.14	94.45
LGA	NYC Laguardia, NY	FEXE52 KWBC	FANOKX	E	40.46	73.54
LGB	Long Beach, CA	FEXW50 KWBC	FANLOX	W	33.49	118.09
LIT	Little Rock, AR	FEXS54 KWBC	FANLZK	CS	34.44	92.14
LND	Lander, WY	FEXC69 KWBC	FANRIW	CW	42.49	108.44
LWS	Lewiston, ID	FEXW46 KWBC	FANOTX	W	46.23	117.01
LYH	Lynchburg, VA	FEXE58 KWBC	FANRNK	ES	37.20	79.12
MAF	Midland, TX	FEXS55 KWBC	FANMAF	S	31.57	102.11
MCG	McGrath, AK	FEAK20 KWBC	----------	---	62.58	155.37
MCI	Kansas City, MO	FEXC62 KWBC	FANEAX	CS	39.19	94.43
MCN	Macon, GA	FEXS42 KWBC	FANFFC	ES	32.42	83.39
MCO	Orlando, FL	FEXS58 KWBC	FANMLB	S	28.26	81.19
MCW	Mason City, IA	FEXC49 KWBC	FANDMX	C	43.09	93.20
MEI	Meridian, MS	FEXS50 KWBC	FANJAN	S	32.20	88.45
MEM	Memphis, TN	FEXS56 KWBC	FANMEM	CS	35.03	90.00
MFR	Medford, OR	FEXW51 KWBC	FANMFR	W	42.22	122.52
MGM	Montgomery, AL	FEXS43 KWBC	FANBMX	S	32.18	86.24
MIA	Miami, FL	FEXS57 KWBC	FANAMX	S	25.49	80.17
MKE	Milwaukee, WI	FEXC63 KWBC	FANMKX	C	42.57	87.54
MKG	Muskegon, MI	FEXC57 KWBC	FANGRR	C	43.10	86.14
MLI	Moline, IL	FEXC50 KWBC	FANDVN	C	41.27	90.31
MLS	Miles City, MT	FEXW40 KWBC	FANBIL	CW	46.25	105.54
MOB	Mobile, AL	FEXS59 KWBC	FANMOB	S	30.41	88.15
MOT	Minot, ND	FEXC43 KWBC	FANBIS	CW	48.16	101.17
MQT	Marquette, MI	FEXC74 KWBC	FANMQT	C	46.32	87.33
MSN	Madison, WI	FEXC63 KWBC	FANMKX	C	43.08	89.20

LIST OF AVN MOS STATIONS (Continued)

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.
MSO	Missoula, MT	FEXW52 KWBC	FANMSO	W	46.55	114.05
MSP	Minneapolis, MN	FEXC64 KWBC	FANMPX	C	44.53	93.13
MSS	Massena, NY	FEXE43 KWBC	FANBTV	E	44.56	74.51
MSY	New Orleans, LA	FEXS61 KWBC	FANLIX	S	29.59	90.15
MYL	McCall, ID	FEXW56 KWBC	FANPIH	CW	44.53	116.06
OKC	Oklahoma City, OK	FEXS62 KWBC	FANOUN	S	35.24	97.36
OLM	Olympia, WA	FEXW60 KWBC	FANSEW	W	46.58	122.54
OMA	Omaha, NE	FEXC65 KWBC	FANOAX	C	41.18	95.54
OME	Nome, AK	FEAK20 KWBC	----------	---	64.30	165.26
ORD	Chicago O'Hare, IL	FEXC44 KWBC	FANLOT	C	41.59	87.54
ORF	Norfolk, VA	FEXE53 KWBC	FANAKQ	E	36.54	76.12
ORT	Northway, AK	FEAK20 KWBC	----------	---	62.57	141.56
OTH	North Bend, OR	FEXW51 KWBC	FANMFR	W	43.25	124.15
OTZ	Kotzebue, AK	FEAK20 KWBC	----------	---	66.52	162.38
PAH	Paducah, KY	FEXC75 KWBC	FANPAH	CS	37.04	88.46
PBI	W. Palm Beach, FL	FEXS57 KWBC	FANAMX	S	26.41	80.07
PDT	Pendleton, OR	FEXW53 KWBC	FANPDT	W	45.41	118.51
PDX	Portland, OR	FEXW54 KWBC	FANPQR	W	45.36	122.36
PHL	Philadelphia, PA	FEXE54 KWBC	FANPHI	E	39.53	75.15
PHX	Phoenix, AZ	FEXW55 KWBC	FANPSR	SW	33.26	112.01
PIA	Peoria, IL	FEXC40 KWBC	FANILX	C	40.40	89.41
PIH	Pocatello, ID	FEXW56 KWBC	FANPIH	CW	42.55	112.36
PIR	Pierre, SD	FEXC41 KWBC	FANABR	C	44.23	100.17
PIT	Pittsburgh, PA	FEXE55 KWBC	FANPBZ	E	40.30	80.13
PNS	Pensacola, FL	FEXS59 KWBC	FANMOB	S	30.28	87.12
PVD	Providence, RI	FEXE42 KWBC	FANBOX	E	41.44	71.26
PWM	Portland, ME	FEXE56 KWBC	FANGYX	E	43.39	70.19
RAP	Rapid City, SD	FEXC68 KWBC	FANUNR	CW	44.03	103.04
RDD	Redding, CA	FEXW58 KWBC	FANSTO	W	40.30	122.18
RDM	Redmond, OR	FEXW53 KWBC	FANPDT	W	44.16	121.09
RDU	Raleigh-Durham, NC	FEXE57 KWBC	FANRAH	ES	35.52	78.47
RFD	Rockford, IL	FEXC44 KWBC	FANLOT	C	42.12	89.06
RIC	Richmond, VA	FEXE53 KWBC	FANAKQ	E	37.30	77.20
RIV	Riverside, CA	FEXW50 KWBC	FANLOX	W	33.54	117.15
RKS	Rock Springs, WY	FEXC69 KWBC	FANRIW	CW	41.36	109.04
RNO	Reno, NV	FEXW57 KWBC	FANREV	W	39.30	119.48
ROA	Roanoke, VA	FEXE58 KWBC	FANRNK	ES	37.19	79.58
ROC	Rochester, NY	FEXE44 KWBC	FANBUF	E	43.07	77.40
ROW	Roswell, NM	FEXS40 KWBC	FANABQ	SW	33.18	104.32
RSL	Russell, KS	FEXC58 KWBC	FANICT	CS	38.52	98.49
RST	Rochester, MN	FEXC61 KWBC	FANARX	C	43.55	92.30
SAC	Sacramento, CA	FEXW58 KWBC	FANSTO	W	38.31	121.30
SAN	San Diego, CA	FEXW59 KWBC	FANSGX	W	32.44	117.10
SAT	San Antonio, TX	FEXS63 KWBC	FANEWX	S	29.32	98.28

LIST OF AVN MOS STATIONS (Continued)

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.
SAV	Savannah, GA	FEXE46 KWBC	FANCHS	ES	32.08	81.12
SBN	South Bend, IN	FEXC44 KWBC	FANLOT	C	41.42	86.19
SCC	Deadhorse, AK	FEAK20 KWBC	----------	---	70.12	148.28
SDF	Louisville, KY	FEXC70 KWBC	FANLMK	ECS	38.11	85.44
SEA	Seattle-Tacoma, WA	FEXW60 KWBC	FANSEW	W	47.27	122.18
SFO	San Francisco, CA	FEXW61 KWBC	FANMTR	W	37.37	122.23
SGF	Springfield, MO	FEXC71 KWBC	FANSGF	CS	37.14	93.23
SHR	Sheridan, WY	FEXC45 KWBC	FANCYS	CW	44.46	106.58
SHV	Shreveport, LA	FEXS64 KWBC	FANSHV	S	32.28	93.49
SIT	Sitka, AK	FEAK20 KWBC	----------	---	57.04	135.21
SJT	San Angelo, TX	FEXS65 KWBC	FANSJT	S	31.22	100.30
SLC	Salt Lake City, UT	FEXW62 KWBC	FANSLC	CW	40.46	111.58
SLE	Salem, OR	FEXW54 KWBC	FANPQR	W	44.55	123.00
SNP	Saint Paul, AK	FEAK20 KWBC	----------	---	57.09	170.13
SPI	Springfield, IL	FEXC40 KWBC	FANILX	C	39.50	89.40
SPS	Wichita Falls, TX	FEXS62 KWBC	FANOUN	S	33.58	98.29
STC	St. Cloud, MN	FEXC64 KWBC	FANMPX	C	45.33	94.04
STL	St. Louis, MO	FEXC72 KWBC	FANLSX	CS	38.45	90.23
SUX	Sioux City, IA	FEXC52 KWBC	FANFSD	C	42.24	96.23
SYR	Syracuse, NY	FEXE41 KWBC	FANBGM	E	43.07	76.07
TAD	Trinidad, CO	FEXC67 KWBC	FANPUB	CS	37.15	104.20
TCS	Truth or Cons., NM	FEXS40 KWBC	FANABQ	SW	33.14	107.16
TKA	Talkeetna, AK	FEAK20 KWBC	----------	---	62.18	150.06
TLH	Tallahassee, FL	FEXS66 KWBC	FANTLH	S	30.23	84.22
TOL	Toledo, OH	FEXE47 KWBC	FANCLE	EC	41.36	83.48
TOP	Topeka, KS	FEXC73 KWBC	FANTOP	CS	39.04	95.38
TPA	Tampa, FL	FEXS67 KWBC	FANTBW	S	27.58	82.32
TRI	Bristol, TN	FEXS60 KWBC	FANMRX	ECS	36.29	82.24
TUL	Tulsa, OK	FEXS68 KWBC	FANTSA	CS	36.12	95.54
TUS	Tucson, AZ	FEXW63 KWBC	FANPWC	SW	32.07	110.56
TVC	Traverse City, MI	FEXC42 KWBC	FANAPX	C	44.44	85.35
TYS	Knoxville, TN	FEXS60 KWBC	FANMRX	ECS	35.49	83.59
UIL	Quillayute, WA	FEXW60 KWBC	FANSEW	W	47.57	124.33
VCT	Victoria, TX	FEXS46 KWBC	FANCRP	S	28.51	96.55
VTN	Valentine, NE	FEXC60 KWBC	FANLBF	C	42.52	100.33
VWS	Valdez, AK	FEAK20 KWBC	----------	---	61.08	146.21
WMC	Winnemucca, NV	FEXW43 KWBC	FANLKN	W	40.54	117.48
YAK	Yakutat, AK	FEAK20 KWBC	----------	---	59.31	139.40
YKM	Yakima, WA	FEXW53 KWBC	FANPDT	W	46.34	120.32
YNG	Youngstown, OH	FEXE47 KWBC	FANCLE	EC	41.16	80.40
YUM	Yuma, AZ	FEXW55 KWBC	FANPSR	SW	32.40	114.36
Y62	S. Ste. Marie, MI	FEXC42 KWBC	FANAPX	C	46.28	84.22
5MK	McKinley Park, AK	FEAK20 KWBC	----------	---	63.44	148.55
5WT	Whittier, AK	FEAK20 KWBC	----------	---	60.46	148.41

INTERPRETATION OF THE AVN-BASED OBJECTIVE FORECAST MESSAGE

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NMCFANALY                                                    - AFOS product identification (AFOS users only).
FEXE40 KWBC 080000                                           - Bulletin header. (See below for headers, AFOS PILS, and stations).
AVN-BASED OBJECTIVE GUIDANCE  12/08/91  0000 UTC             - Forecast identification, initial date, and time (UTC).
ALB    SUN 08| MON 09| TUE 10                                - Station ID, valid day of week and month (UTC).
MN/MX      49| 34  45| 24  27                                - Min and max temperature (°F) for LOCAL nighttime/daytime periods.
POP12      32| 69 100| 67  58                                - Probability of precipitation for 0000-1200 and 1200-0000 UTC periods.
CPOS        0|  2  29| 75  99                                - Conditional prob. of snow for 0000-1200 and 1200-0000 UTC periods.
CLDS       62| 76  97| 97  88                                - Mean opaque cloudiness (%) for 0000-1200 and 1200-0000 UTC periods.
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F E X E

FEXE40KWBC (FANALY)
- ALB - Albany, NY

FEXE41KWBC (FANBGM)
- AVP - Scranton, PA
- BGM - Binghamton, NY
- SYR - Syracuse, NY

FEXE42KWBC (FANBOX)
- BDL - Hartford, CT
- BOS - Boston, MA
- PVD - Providence, RI

FEXE43KWBC (FANBTV)
- BTV - Burlington, VT
- MSS - Massena, NY

FEXE44KWBC (FANBUF)
- BUF - Buffalo, NY
- ROC - Rochester, NY

FEXE45KWBC (FANCAE)
- AGS - Augusta, GA
- CAE - Columbia, SC

FEXE46KWBC (FANCHS)
- CHS - Charleston, SC
- SAV - Savannah, GA

FEXE47KWBC (FANCLE)
- CAK - Akron-Canton, OH
- CLE - Cleveland, OH
- ERI - Erie, PA
- TOL - Toledo, OH
- YNG - Youngstown, OH

FEXE48KWBC (FANRLX)
- BKW - Beckley, WV
- CRW - Charleston, WV
- HTS - Huntington, WV

F E X E

FEXE49KWBC (FANILN)
- CMH - Columbus, OH
- CVG - Covington, KY
- DAY - Dayton, OH

FEXE50KWBC (FANILM)
- ILM - Wilmington, NC

FEXE51KWBC (FANMHX)
- HAT - Cape Hatteras, NC

FEXE52KWBC (FANOKX)
- EWR - Newark, NJ
- JFK - NYC Kennedy, NY
- LGA - NYC Laguardia , NY

FEXE53KWBC (FANAKQ)
- ORF - Norfolk, VA
- RIC - Richmond, VA

FEXE54KWBC (FANPHI)
- ABE - Allentown, PA
- ACY - Atlantic City, NJ
- ILG - Wilmington, DE
- PHL - Philadelphia, PA

FEXE55KWBC (FANPBZ)
- PIT - Pittsburgh, PA

FEXE56KWBC (FANGYX)
- BGR - Bangor, ME
- CAR - Caribou, ME
- CON - Concord, NH
- PWM - Portland, ME

FEXE57KWBC (FANRAH)
- GSO - Greensboro, NC
- RDU - Raleigh, NC

F E X E / F E X C

FEXE58KWBC (FANRNK)
- LYH - Lynchburg, VA
- ROA - Roanoke, VA

FEXE59KWBC (FANCTP)
- BFD - Bradford, PA
- CXY - Harrisburg, PA
- IPT - Williamsport, PA

FEXE60KWBC (FANLWX)
- BWI - Baltimore, MD
- DCA - Wash. National, VA
- IAD - Wash. Dulles, VA

FEXE61KWBC (FANGSP)
- CLT - Charlotte, NC
- GSP - Greenville, SC

FEXC40KWBC (FANILX)
- PIA - Peoria, IL
- SPI - Springfield, IL

FEXC41KWBC (FANABR)
- ABR - Aberdeen, SD
- PIR - Pierre, SD

FEXC42KWBC (FANAPX)
- APN - Alpena, MI
- TVC - Traverse City, MI
- Y62 - S. Ste. Marie, MI

FEXC43KWBC (FANBIS)
- BIS - Bismarck, ND
- ISN - Williston, ND
- MOT - Minot, ND

FEXC44KWBC (FANLOT)
- ORD - Chicago, IL
- RFD - Rockford, IL
- SBN - South Bend, IN

F E X C

FEXC45KWBC (FANCYS)
- BFF - Scottsbluff, NE
- CYS - Cheyenne, WY
- SHR - Sheridan, WY

FEXC46KWBC (FANDDC)
- DDC - Dodge City, KS

FEXC47KWBC (FANBOU)
- DEN - Denver, CO

FEXC48KWBC (FANDLH)
- DLH - Duluth, MN
- INL - Intl. Falls, MN

FEXC49KWBC (FANDMX)
- ALO - Waterloo, IA
- DSM - Des Moines, IA
- MCW - Mason City, IA

FEXC50KWBC (FANDVN)
- MLI - Moline, IL

FEXC51KWBC (FANFGF)
- FAR - Fargo, ND
- GFK - Grand Forks, ND

FEXC52KWBC (FANFSD)
- FSD - Sioux Falls, SD
- HON - Huron, SD
- SUX - Sioux City, IA

FEXC53KWBC (FANGJT)
- GJT - Grand Jct., CO

FEXC54KWBC (FANGLD)
- GLD - Goodland, KS

FEXC55KWBC (FANGRB)
- GRB - Green Bay, WI

F E X C

FEXC56KWBC (FANGID)
- GRI - Grand Island, NE

FEXC57KWBC (FANGRR)
- GRR - Grand Rapids, MI
- LAN - Lansing, MI
- MKG - Muskegon, MI

FEXC58KWBC (FANICT)
- ICT - Wichita, KS
- RSL - Russell, KS

FEXC59KWBC (FANIND)
- EVV - Evansville, IN
- FWA - Fort Wayne, IN
- IND - Indianapolis, IN

FEXC60KWBC (FANLBF)
- LBF - North Platte, NE
- VTN - Valentine, NE

FEXC61KWBC (FANARX)
- RST - Rochester, MN

FEXC62KWBC (FANEAX)
- MCI - Kansas City, MO

FEXC63KWBC (FANMKX)
- MKE - Milwaukee, WI
- MSN - Madison, WI

FEXC64KWBC (FANMPX)
- EAU - Eau Claire, WI
- MSP - Minneapolis, MN
- STC - St. Cloud, MN

FEXC65KWBC (FANOAX)
- OMA - Omaha, NE

F E X C / F E X S

FEXC66KWBC (FANDTX)
DTW - Detroit, MI
FNT - Flint, MI

FEXC67KWBC (FANPUB)
COS - Colo. Springs, CO
TAD - Trinidad, CO

FEXC68KWBC (FANUNR)
RAP - Rapid City, SD

FEXC69KWBC (FANRIW)
CPR - Casper, WY
LND - Lander, WY
RKS - Rock Springs, WY

FEXC70KWBC (FANLMK)
LEX - Lexington, KY
SDF - Louisville, KY

FEXC71KWBC (FANSGF)
SGF - Springfield, MO

FEXC72KWBC (FANLSX)
COU - Columbia, MO
STL - St. Louis, MO

FEXC73KWBC (FANTOP)
CNK - Concordia, KS
TOP - Topeka, KS

FEXC74KWBC (FANMQT)
MQT - Marquette, MI

FEXC75KWBC (FANPAH)
PAH - Paducah, KY

FEXS40KWBC (FANABQ)
ABQ - Albuquerque, NM
GUP - Gallup, NM
ROW - Roswell, NM
TCS - Truth or Cons., NM

FEXS41KWBC (FANAMA)
AMA - Amarillo, TX

FEXS42KWBC (FANFFC)
AHN - Athens, GA
ATL - Atlanta, GA
MCN - Macon, GA

FEXS43KWBC (FANBMX)
BHM - Birmingham, AL
HSV - Huntsville, AL
MGM - Montgomery, AL

F E X S

FEXS44KWBC (FANOHX)
BNA - Nashville, TN

FEXS45KWBC (FANBRO)
BRO - Brownsville, TX

FEXS46KWBC (FANCRP)
CRP - Corpus Christi, TX
VCT - Victoria, TX

FEXS47KWBC (FANEPZ)
ELP - El Paso, TX

FEXS48KWBC (FANFWS)
ACT - Waco, TX
DFW - Dallas-Ft.Wrth, TX

FEXS49KWBC (FANHGX)
IAH - Houston, TX

FEXS50KWBC (FANJAN)
JAN - Jackson, MS
MEI - Meridian, MS

FEXS51KWBC (FANJAX)
JAX - Jacksonville, FL

FEXS52KWBC (FANLUB)
LBB - Lubbock, TX

FEXS53KWBC (FANLCH)
LCH - Lake Charles, LA

FEXS54KWBC (FANLZK)
LIT - Little Rock, AR

FEXS55KWBC (FANMAF)
MAF - Midland, TX

FEXS56KWBC (FANMEM)
MEM - Memphis, TN

FEXS57KWBC (FANAMX)
EYW - Key West, FL
MIA - Miami, FL
PBI - W. Palm Beach, FL

FEXS58KWBC (FANMLB)
DAB - Daytona Beach, FL
MCO - Orlando, FL

FEXS59KWBC (FANMOB)
MOB - Mobile, AL
PNS - Pensacola, FL

F E X S / F E X W

FEXS60KWBC (FANMRX)
AVL - Asheville, NC
CHA - Chattanooga, TN
TRI - Bristol, TN
TYS - Knoxville, TN

FEXS61KWBC (FANLIX)
BTR - Baton Rouge, LA
MSY - New Orleans, LA

FEXS62KWBC (FANOUN)
OKC - Oklahoma City, OK
SPS - Wichita Falls, TX

FEXS63KWBC (FANEWX)
AUS - Austin, TX
DRT - Del Rio, TX
SAT - San Antonio, TX

FEXS64KWBC (FANSHV)
LFK - Lufkin, TX
SHV - Shreveport, LA

FEXS65KWBC (FANSJT)
ABI - Abilene, TX
SJT - San Angelo, TX

FEXS66KWBC (FANTLH)
ABY - Albany, GA
TLH - Tallahassee, FL

FEXS67KWBC (FANTBW)
FMY - Ft. Myers, FL
TPA - Tampa, FL

FEXS68KWBC (FANTSA)
FSM - Fort Smith, AR
TUL - Tulsa, OK

FEXW40KWBC (FANBIL)
BIL - Billings, MT
MLS - Miles City, MT

FEXW41KWBC (FANBOI)
BNO - Burns, OR
BOI - Boise, ID

FEXW42KWBC (FANEKA)
ACV - Arcata, CA

FEXW43KWBC (FANLKN)
EKO - Elko, NV
ELY - Ely, NV
WMC - Winnemucca, NV

F E X W

FEXW44KWBC (FANHNX)
BFL - Bakersfield, CA
FAT - Fresno, CA

FEXW45KWBC (FANFGZ)
FLG - Flagstaff, AZ

FEXW46KWBC (FANOTX)
GEG - Spokane, WA

FEXW47KWBC (FANGGW)
GGW - Glasgow, MT

FEXW48KWBC (FANTFX)
GTF - Great Falls, MT
HLN - Helena, MT
HVR - Havre, MT

FEXW49KWBC (FANVEF)
LAS - Las Vegas, NV

FEXW50KWBC (FANLOX)
LAX - Los Angeles, CA
LGB - Long Beach, CA
RIV - Riverside, CA

FEXW51KWBC (FANMFR)
MFR - Medford, OR
OTH - North Bend, OR

FEXW52KWBC (FANMSO)
FCA - Kalispell, MT
MSO - Missoula, MT

FEXW53KWBC (FANPDT)
PDT - Pendleton, OR
RDM - Redmond, OR
YKM - Yakima, WA

FEXW54KWBC (FANPQR)
AST - Astoria, OR
EUG - Eugene, OR
PDX - Portland, OR
SLE - Salem, OR

FEXW55KWBC (FANPSR)
PHX - Phoenix, AZ
YUM - Yuma, AZ

FEXW56KWBC (FANPIH)
MYL - McCall, ID
PIH - Pocatello, ID

FEXW57KWBC (FANREV)
RDD - Redding, CA
RNO - Reno, NV

F E X W / F E A K 2 0

FEXW58KWBC (FANSTO)
SAC - Sacramento, CA

FEXW59KWBC (FANSGX)
SAN - San Diego, CA

FEXW60KWBC (FANSEW)
HQM - Hoquiam, WA
OLM - Olympia, WA
SEA - Seattle-Tacoma, WA
UIL - Quillayute, WA

FEXW61KWBC (FANMTR)
SFO - San Francisco, CA

FEXW62KWBC (FANSLC)
CDC - Cedar City, UT
SLC - Salt Lake City, UT

FEXW63KWBC (FANPWC)
TUS - Tucson, AZ

FEAK20KWBC
ADQ - Kodiak, AK
AKN - King Salmon, AK
ANC - Anchorage, AK
ANN - Annette Is., AK
BET - Bethel, AK
BIG - Big Delta, AK
BRW - Barrow, AK
BTI - Barter Is., AK
BTT - Bettles, AK
CDB - Cold Bay, AK
CDV - Cordova, AK
DLG - Dillingham, AK
ENA - Kenai, AK
FAI - Fairbanks, AK
GKN - Gulkana, AK
HOM - Homer, AK
JNU - Juneau, AK
KTN - Ketchikan, AK
MCG - McGrath, AK
OME - Nome, AK
ORT - Northway, AK
OTZ - Kotzebue, AK
SCC - Deadhorse, AK
SIT - Sitka, AK
SNP - St. Paul Is., AK
TKA - Talkeetna, AK
VWS - Valdez, AK
YAK - Yakutat, AK
5MK - McKinley Park, AK
5WT - Whittier, AK

INTERPRETATION OF THE AVN-BASED OBJECTIVE FORECAST MESSAGE

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NMCFANALY                                                  - AFOS product identification (AFOS users only).
FEXE40 KWBC 080000                                         - Bulletin header. (See below for headers, AFOS PILS, and stations).
AVN-BASED OBJECTIVE GUIDANCE  12/08/91  0000 UTC           - Forecast identification, initial date, and time (UTC).
ALB    SUN 08| MON 09| TUE 10                              - Station ID, valid day of week and month (UTC).
MN/MX      49| 34  45| 24  27                              - Min and max temperature (°F) for LOCAL nighttime/daytime periods.
POP12      32| 69 100| 67  58                              - Probability of precipitation for 0000-1200 and 1200-0000 UTC periods.
CPOS        0|  2  29| 75  99                              - Conditional prob. of snow for 0000-1200 and 1200-0000 UTC periods.
CLDS       62| 76  97| 97  88                              - Mean opaque cloudiness (%) for 0000-1200 and 1200-0000 UTC periods.
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F E X E

FEXE40KWBC (FANALY)
- ALB - Albany, NY

FEXE41KWBC (FANBGM)
- AVP - Scranton, PA
- BGM - Binghamton, NY
- SYR - Syracuse, NY

FEXE42KWBC (FANBOX)
- BDL - Hartford, CT
- BOS - Boston, MA
- PVD - Providence, RI

FEXE43KWBC (FANBTV)
- BTV - Burlington, VT
- MSS - Massena, NY

FEXE44KWBC (FANBUF)
- BUF - Buffalo, NY
- ROC - Rochester, NY

FEXE45KWBC (FANCAE)
- AGS - Augusta, GA
- CAE - Columbia, SC

FEXE46KWBC (FANCHS)
- CHS - Charleston, SC
- SAV - Savannah, GA

FEXE47KWBC (FANCLE)
- CAK - Akron-Canton, OH
- CLE - Cleveland, OH
- ERI - Erie, PA
- TOL - Toledo, OH
- YNG - Youngstown, OH

FEXE48KWBC (FANRLX)
- BKW - Beckley, WV
- CRW - Charleston, WV
- HTS - Huntington, WV

F E X E

FEXE49KWBC (FANILN)
- CMH - Columbus, OH
- CVG - Covington, KY
- DAY - Dayton, OH

FEXE50KWBC (FANILM)
- ILM - Wilmington, NC

FEXE51KWBC (FANMHX)
- HAT - Cape Hatteras, NC

FEXE52KWBC (FANOKX)
- EWR - Newark, NJ
- JFK - NYC Kennedy, NY
- LGA - NYC Laguardia , NY

FEXE53KWBC (FANAKQ)
- ORF - Norfolk, VA
- RIC - Richmond, VA

FEXE54KWBC (FANPHI)
- ABE - Allentown, PA
- ACY - Atlantic City, NJ
- ILG - Wilmington, DE
- PHL - Philadelphia, PA

FEXE55KWBC (FANPBZ)
- PIT - Pittsburgh, PA

FEXE56KWBC (FANGYX)
- BGR - Bangor, ME
- CAR - Caribou, ME
- CON - Concord, NH
- PWM - Portland, ME

FEXE57KWBC (FANRAH)
- GSO - Greensboro, NC
- RDU - Raleigh, NC

F E X E / F E X C

FEXE58KWBC (FANRNK)
- LYH - Lynchburg, VA
- ROA - Roanoke, VA

FEXE59KWBC (FANCTP)
- BFD - Bradford, PA
- CXY - Harrisburg, PA
- IPT - Williamsport, PA

FEXE60KWBC (FANLWX)
- BWI - Baltimore, MD
- DCA - Wash. National, VA
- IAD - Wash. Dulles, VA

FEXE61KWBC (FANGSP)
- CLT - Charlotte, NC
- GSP - Greenville, SC

FEXC40KWBC (FANILX)
- PIA - Peoria, IL
- SPI - Springfield, IL

FEXC41KWBC (FANABR)
- ABR - Aberdeen, SD
- PIR - Pierre, SD

FEXC42KWBC (FANAPX)
- APN - Alpena, MI
- TVC - Traverse City, MI
- Y62 - S. Ste. Marie, MI

FEXC43KWBC (FANBIS)
- BIS - Bismarck, ND
- ISN - Williston, ND
- MOT - Minot, ND

FEXC44KWBC (FANLOT)
- ORD - Chicago, IL
- RFD - Rockford, IL
- SBN - South Bend, IN

F E X C

FEXC45KWBC (FANCYS)
- BFF - Scottsbluff, NE
- CYS - Cheyenne, WY
- SHR - Sheridan, WY

FEXC46KWBC (FANDDC)
- DDC - Dodge City, KS

FEXC47KWBC (FANBOU)
- DEN - Denver, CO

FEXC48KWBC (FANDLH)
- DLH - Duluth, MN
- INL - Intl. Falls, MN

FEXC49KWBC (FANDMX)
- ALO - Waterloo, IA
- DSM - Des Moines, IA
- MCW - Mason City, IA

FEXC50KWBC (FANDVN)
- MLI - Moline, IL

FEXC51KWBC (FANFGF)
- FAR - Fargo, ND
- GFK - Grand Forks, ND

FEXC52KWBC (FANFSD)
- FSD - Sioux Falls, SD
- HON - Huron, SD
- SUX - Sioux City, IA

FEXC53KWBC (FANGJT)
- GJT - Grand Jct., CO

FEXC54KWBC (FANGLD)
- GLD - Goodland, KS

FEXC55KWBC (FANGRB)
- GRB - Green Bay, WI

F E X C

FEXC56KWBC (FANGID)
- GRI - Grand Island, NE

FEXC57KWBC (FANGRR)
- GRR - Grand Rapids, MI
- LAN - Lansing, MI
- MKG - Muskegon, MI

FEXC58KWBC (FANICT)
- ICT - Wichita, KS
- RSL - Russell, KS

FEXC59KWBC (FANIND)
- EVV - Evansville, IN
- FWA - Fort Wayne, IN
- IND - Indianapolis, IN

FEXC60KWBC (FANLBF)
- LBF - North Platte, NE
- VTN - Valentine, NE

FEXC61KWBC (FANARX)
- RST - Rochester, MN

FEXC62KWBC (FANEAX)
- MCI - Kansas City, MO

FEXC63KWBC (FANMKX)
- MKE - Milwaukee, WI
- MSN - Madison, WI

FEXC64KWBC (FANMPX)
- EAU - Eau Claire, WI
- MSP - Minneapolis, MN
- STC - St. Cloud, MN

FEXC65KWBC (FANOAX)
- OMA - Omaha, NE

REFERENCE: TECHNICAL PROCEDURES BULLETIN NO. 415: The AVN-Based Statistical Guidance Message

UPDATED 9/94

F E X C / F E X S

FEXC66KWBC (FANDTX)
DTW - Detroit, MI
FNT - Flint, MI

FEXC67KWBC (FANPUB)
COS - Colo. Springs, CO
TAD - Trinidad, CO

FEXC68KWBC (FANUNR)
RAP - Rapid City, SD

FEXC69KWBC (FANRIW)
CPR - Casper, WY
LND - Lander, WY
RKS - Rock Springs, WY

FEXC70KWBC (FANLMK)
LEX - Lexington, KY
SDF - Louisville, KY

FEXC71KWBC (FANSGF)
SGF - Springfield, MO

FEXC72KWBC (FANLSX)
COU - Columbia, MO
STL - St. Louis, MO

FEXC73KWBC (FANTOP)
CNK - Concordia, KS
TOP - Topeka, KS

FEXC74KWBC (FANMQT)
MQT - Marquette, MI

FEXC75KWBC (FANPAH)
PAH - Paducah, KY

FEXS40KWBC (FANABQ)
ABQ - Albuquerque, NM
GUP - Gallup, NM
ROW - Roswell, NM
TCS - Truth or Cons., NM

FEXS41KWBC (FANAMA)
AMA - Amarillo, TX

FEXS42KWBC (FANFFC)
AHN - Athens, GA
ATL - Atlanta, GA
MCN - Macon, GA

FEXS43KWBC (FANBMX)
BHM - Birmingham, AL
HSV - Huntsville, AL
MGM - Montgomery, AL

F E X S

FEXS44KWBC (FANOHX)
BNA - Nashville, TN

FEXS45KWBC (FANBRO)
BRO - Brownsville, TX

FEXS46KWBC (FANCRP)
CRP - Corpus Christi, TX
VCT - Victoria, TX

FEXS47KWBC (FANEPZ)
ELP - El Paso, TX

FEXS48KWBC (FANFWS)
ACT - Waco, TX
DFW - Dallas-Ft.Wrth, TX

FEXS49KWBC (FANHGX)
IAH - Houston, TX

FEXS50KWBC (FANJAN)
JAN - Jackson, MS
MEI - Meridian, MS

FEXS51KWBC (FANJAX)
JAX - Jacksonville, FL

FEXS52KWBC (FANLUB)
LBB - Lubbock, TX

FEXS53KWBC (FANLCH)
LCH - Lake Charles, LA

FEXS54KWBC (FANLZK)
LIT - Little Rock, AR

FEXS55KWBC (FANMAF)
MAF - Midland, TX

FEXS56KWBC (FANMEM)
MEM - Memphis, TN

FEXS57KWBC (FANAMX)
EYW - Key West, FL
MIA - Miami, FL
PBI - W. Palm Beach, FL

FEXS58KWBC (FANMLB)
DAB - Daytona Beach, FL
MCO - Orlando, FL

FEXS59KWBC (FANMOB)
MOB - Mobile, AL
PNS - Pensacola, FL

F E X S / F E X W

FEXS60KWBC (FANMRX)
AVL - Asheville, NC
CHA - Chattanooga, TN
TRI - Bristol, TN
TYS - Knoxville, TN

FEXS61KWBC (FANLIX)
BTR - Baton Rouge, LA
MSY - New Orleans, LA

FEXS62KWBC (FANOUN)
OKC - Oklahoma City, OK
SPS - Wichita Falls, TX

FEXS63KWBC (FANEWX)
AUS - Austin, TX
DRT - Del Rio, TX
SAT - San Antonio, TX

FEXS64KWBC (FANSHV)
LFK - Lufkin, TX
SHV - Shreveport, LA

FEXS65KWBC (FANSJT)
ABI - Abilene, TX
SJT - San Angelo, TX

FEXS66KWBC (FANTLH)
ABY - Albany, GA
TLH - Tallahassee, FL

FEXS67KWBC (FANTBW)
FMY - Ft. Myers, FL
TPA - Tampa, FL

FEXS68KWBC (FANTSA)
FSM - Fort Smith, AR
TUL - Tulsa, OK

FEXW40KWBC (FANBIL)
BIL - Billings, MT
MLS - Miles City, MT

FEXW41KWBC (FANBOI)
BNO - Burns, OR
BOI - Boise, ID

FEXW42KWBC (FANEKA)
ACV - Arcata, CA

FEXW43KWBC (FANLKN)
EKO - Elko, NV
ELY - Ely, NV
WMC - Winnemucca, NV

F E X W

FEXW44KWBC (FANHNX)
BFL - Bakersfield, CA
FAT - Fresno, CA

FEXW45KWBC (FANFGZ)
FLG - Flagstaff, AZ

FEXW46KWBC (FANOTX)
GEG - Spokane, WA

FEXW47KWBC (FANGGW)
GGW - Glasgow, MT

FEXW48KWBC (FANTFX)
GTF - Great Falls, MT
HLN - Helena, MT
HVR - Havre, MT

FEXW49KWBC (FANVEF)
LAS - Las Vegas, NV

FEXW50KWBC (FANLOX)
LAX - Los Angeles, CA
LGB - Long Beach, CA
RIV - Riverside, CA

FEXW51KWBC (FANMFR)
MFR - Medford, OR
OTH - North Bend, OR

FEXW52KWBC (FANMSO)
FCA - Kalispell, MT
MSO - Missoula, MT

FEXW53KWBC (FANPDT)
PDT - Pendleton, OR
RDM - Redmond, OR
YKM - Yakima, WA

FEXW54KWBC (FANPQR)
AST - Astoria, OR
EUG - Eugene, OR
PDX - Portland, OR
SLE - Salem, OR

FEXW55KWBC (FANPSR)
PHX - Phoenix, AZ
YUM - Yuma, AZ

FEXW56KWBC (FANPIH)
MYL - McCall, ID
PIH - Pocatello, ID

FEXW57KWBC (FANREV)
RNO - Reno, NV

F E X W / F E A K 2 0

FEXW58KWBC (FANSTO)
RDD - Redding, CA
SAC - Sacramento, CA

FEXW59KWBC (FANSGX)
SAN - San Diego, CA

FEXW60KWBC (FANSEW)
HQM - Hoquiam, WA
OLM - Olympia, WA
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SFO - San Francisco, CA

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CDC - Cedar City, UT
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TUS - Tucson, AZ

FEAK20KWBC
ADQ - Kodiak, AK
AKN - King Salmon, AK
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MCG - McGrath, AK
OME - Nome, AK
ORT - Northway, AK
OTZ - Kotzebue, AK
SCC - Deadhorse, AK
SIT - Sitka, AK
SNP - St. Paul Is., AK
TKA - Talkeetna, AK
VWS - Valdez, AK
YAK - Yakutat, AK
5MK - McKinley Park, AK
5WT - Whittier, AK