CHAPTER 4

WEATHER TACTICAL DECISION AIDS

As your commander's weather interpreter, you are familiar with weather and its effects on operations, systems, and personnel. History provides many examples where weather, properly taken into consideration, contributed to the successful accomplishment of the mission. Conversely, when weather has not been properly considered, the consequences have been disastrous. To gain the maximum benefit from the data provided here, you must know the weather effects critical threshold values for the operations, systems, and personnel in your unit. Specific BFA-associated WTDAs located in the appendixes will be helpful.

EXPLANATION AND PRESENTATION

Conduct of the battle within the AO is influenced by the effects of weather. You advise and alert the commander on how, when, where, and why the battlefield dynamics will change because of weather. The key is to learn to exploit opportunities offered by weather while reducing or minimizing the adverse effects.

The geographical layout of the battlefield is important to you because the times and distances across the AO and AI vary with the size, type of unit, and mission. These constraints affect the type of weather forecasts needed in terms of time and area. The duration of the forecast must meet or exceed the planning and execution cycles.

The following are some operations affected by critical weather extremes.

- Poor visibility degrades target acquisition and engagement, C^2, troop and vehicle mobility, maneuver options, and air operations.
- High and low winds affect chemical weapons and smoke employment, air operations, antenna setup and employment, personnel (windchill), target tracking devices, and accuracy of artillery fire support systems.
- Temperature extremes impact troop safety and performance, trafficability, maintenance, aircraft limits, optical systems, employment of chemical weapons and smoke, and accuracy of fire support systems.

- Precipitation degrades mobility, trafficability, nuclear and chemical weapons, smoke, the effective use of laser-guided munitions, maneuver options, air operations, target acquisition, and tactical ballistic missile (TBM) employment and launching.
- Cloud cover affects all types of air operations. Cloud cover also can limit or enhance the effects of nuclear weapons, smart weapons, and smoke.
- Severe weather conditions (such as blizzards, hailstorms, thunderstorms, strong winds, and freezing rain) impact almost every battlefield operation.

Even the best weather information or intelligence will not necessarily be the decisive factor in winning the battle. However, it can be a force multiplier when applied during planning. It will almost certainly affect the degree of success you have. Weather may not be the sole determining factor as to the GO, NO-GO decision, but it will surely influence a commander's decision on how best to use combat power.

SOURCE OF WEATHER VALUES

Most of the critical weather values used here are a compilation of validated values taken from a variety of military publications including system technical manuals, other FMs, and proponent requirements. Some subjective values (based on personal experience and usually not validated) are also included. You will probably find that you will add values of your own based on practice and experience. (These insights, forwarded to the proponent office, will be valuable in updating the contents of future iterations of this manual.)

USE OF THE APPENDIXES

Time is in short supply in the field and, in some cases, higher priority tasks will permit you very little time to develop weather information for the commander's briefings. Appendixes B through N have been developed to help you quickly identify critical weather values and their effects on the operations, systems, and personnel of the unit. These WTDAs allow you to swiftly turn weather forecasts and observations into meaningful weather effects information. Practicing this skill in garrison will be a great help in the field.

CONTENTS OF APPENDIXES

Appendix A contains a step-by-step guide through the process of translating adverse weather conditions into force impacts. In addition, it features quick references tables to identify critical value ranges of five basic weather elements. For each weather element, the critical value ranges are shown impacting Army BFAs, E-O, and threat systems. The five elements evaluated are cloud ceilings, reduced visibility, surface wind, temperature, and precipitation. These references apply to critical values shown in Appendixes B through N.

Appendix O contains a current list of weather and environmental elements or parameters identified by BFA proponents and other Army agencies. The impacts of some of these are not fully known and data may not presently be collected.

Appendix P contains useful conversion factors. An expanded list of weather terminology is presented in the glossary.

Weather data and impacts reflected in these appendixes are predicated on normal unit configuration.

THE WEATHER BRIEFING

This section contains an example that will help you visualize how the WTDA charts and tables can be used to develop and present a comprehensive weather and weather effects briefing. For this exercise you are the S2 of a battalion task force (TF) located in North Korea in January. Your TF consists of two companies of M-1 tanks and two companies of Mechanized Infantry equipped with the M-2 infantry fighting vehicle (IFV). The TF has a fire support team from a direct support 155-mm self-propelled artillery battalion. The TF is conducting defensive operations as part of a brigade operating in the main battle area. You have just received the weather forecast from brigade headquarters as illustrated in Figure 4-1.

FROM: BRIGADE
TO: BATTALION
SUBJECT: WEATHER FORECAST
LOCATION: PUNGSAN AREA - 40,49N 128,09E (OR USE UTM GRID)

VALID PERIOD: 121200Z TO 131200Z JAN 92

Clear skies, surface winds northerly at 10 knots gusting to 20 knots, visibility will be unlimited except occasionally 1 to 2 miles in blowing snow. Low temperatures expected to dip to between -20 and -25 degrees F, warming to a high near 0 degrees F.

OUTLOOK: 131200Z TO 151200Z:

Increasing cloudiness, chance of heavy snow and temperatures warming to near 10 degrees F.

LIGHT DATA: BMNT 122147Z, BMCT 122221Z, SR 122251Z, SS 130820Z, EECT 130851Z, EENT 130925Z, MR 1924Z, MS 0819Z

NIGHT VISION GOGGLE USE PERIOD: 0149Z TO 0532Z

NOTE: Because blowing snow conditions are produced as a result of the combination of strong winds with loose snow on the ground, "blowing snow" is not listed as a separate weather condition in this manual. However, you need to be aware that such conditions will seriously degrade visibility. Similar conditions occur with blowing sand and blowing dust.

Figure 4-1. Example of a weather forecast.

Based on this forecast, you quickly scan the tables in Appendix A. You find that forecasted temperatures may have a critical impact on several TF systems. Turning to the Armor and Mechanized Infantry sections of Appendixes C and J, you identify actual systems that are impacted by the latest weather forecast. In addition, you also review Appendixes F and L and identify any additional impacts on E-O systems and personnel.

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You alert your commander and the staff about the adverse impact of the forecasted weather. You prepare two simple charts to be used during your commander's stand-up briefing. You may want to leave these charts posted in the CP throughout the day for continued reference.

Remember to update the charts when a new forecast is issued by the WETM. Methods used in briefing your commander during the morning and evening briefings may vary greatly from command to command. The formats illustrated should be used as a guide and, of course, modified to suit your particular situation.

The first chart presented to your commander is a standardized chart containing the important elements of the weather forecast. Figure 4-2 illustrates how the weather elements and parameters contained in the forecast might be displayed on the board. Blown up to poster size and covered with acetate, this chart can be updated easily.

Figure 4-3 shows color codes as one way to display potential weather impacts on operations, systems, and personnel in your unit.

Another way would be to write the words "moderate" and "severe" in those blocks affected. Do not list all the equipment or systems, but have the list available to answer questions posed by the commander or staff. Stress those critical systems during the verbal portion of your briefing.

If the weather conditions change significantly during the period covered by the SWO's forecast (see Figure 4-1), then an updated impact chart will have to be prepared. Because a brigade or battalion's AI is small, the SWO's forecast is likely to be uniform across the AI.

WEATHER FORECAST

VALID FOR 121200Z to 131200Z

LOCATION: PUNGSAN

24-HOUR FORECAST:

SKIES: CLEAR MORNING AND NIGHT, PARTLY CLOUDY IN THE AFTERNOON, BASES 3,000 FEET.

VISIBILITY: UNLIMITED, OCCASIONALLY 1 TO 2 MILES IN BLOWING SNOW DURING AFTERNOON.

WINDS: NORTH TO NORTH WEST, 10 TO 15 KNOTS, OCCASIONAL GUSTS TO 25 KNOTS IN AFTERNOON.

TEMPERATURES: MAX: 10°F MIN: -20°F

72-HOUR OUTLOOK:

CLOUDY SKIES, SNOW FLURRIES DURING AFTERNOON HOURS LOWERING VISIBILITY TO 2 TO 4 MILES.

TEMPERATURES: MAX: 20°F MIN: -5°F

LIGHT DATA

BMNT:	1247Z	MOONRISE:	1924Z
BMCT:	2221Z	MOONSET:	0819Z
SUNRISE:	2251Z		
SUNSET:	0820Z	NIGHT VISION	
EECT:	0851Z	GOGGLE USE:	
EENT:	0925Z	0149Z TO 0532Z	

Figure 4-2. Example of a weather forecast chart.

WEATHER IMPACT CHART

PERIOD 121200Z to 131200Z

IMPACTED ITEMS	CLOUDS	PRECIPI-TATION	WIND	VISIBILITY	TEMPER-ATURE
NBC DEFENSE	GREEN	GREEN	GREEN	GREEN	RED
NIGHT VISION DEVICES	GREEN	GREEN	GREEN	AMBER EXCEPT 02 to 05Z	AMBER
CSS	GREEN	AMBER	AMBER	AMBER	AMBER
TOW/DRAGON	GREEN	GREEN	AMBER	GREEN	RED
M-1/M-2	GREEN	GREEN	GREEN	GREEN	AMBER
SMOKE/ CHEMICAL	GREEN	GREEN	AMBER	GREEN	GREEN
GROUND RADAR	GREEN	GREEN	AMBER	GREEN	GREEN
PERSONNEL	GREEN	GREEN	RED	GREEN	RED
THREAT	GREEN	GREEN	GREEN	AMBER	GREEN

NO IMPACT	GREEN
MODERATE IMPACT (Normal effectiveness reduced 25 to 75%.)	AMBER
SEVERE IMPACT (Normal effectiveness reduced to 0 to 25%).	RED

Figure 4-3. Example of a weather impacts display chart.