AFOS

THE AFOS WORKING ENVIRONMENT*

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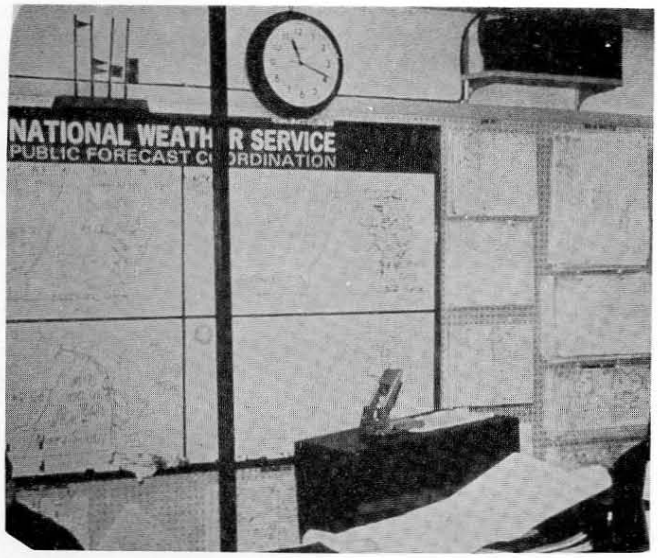
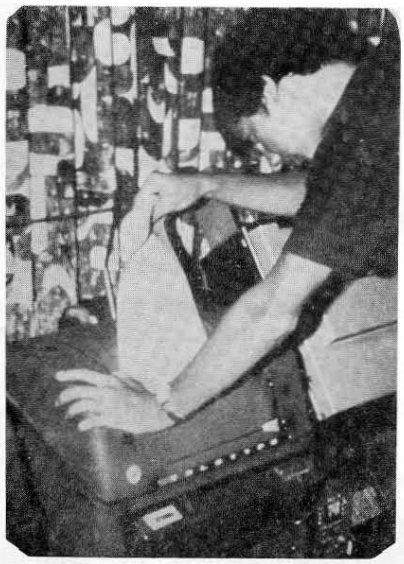
We are all pretty much aware of how data is collected and transmitted and of how products are formulated and disseminated by National Weather Services offices today. We use a mixture of teletypewriter and facsimile circuits and a lot of manual intervention to accomplish these ends. Our offices contain communication areas dedicated to the used and maintenance of noisy, paper-producing mechanical equipment. Little automated assistance is available to field personnel under this sytem. Data-gathering operations can be generally characterized by the tearing, sorting, and filing of paper. These paper-oriented activities are also used in product formulation, delivery and archival. This is the working environment, as it used to be.



Today's Weather Service Office

What is the new AFOS working environment like? How does it differ from the old? How will a forecaster generate a product in this new environment?

To produce a forecast, the forecaster proceeds much as he used to with hard-copy data, except that this data is now displayed on the AFOS console screens. In AFOS, the graphic products that are available over the facsimile circuits are broken down by fields. The height, temperature, vorticity fields, etc., are available as separate products over associated map backgrounds. These graphic fields are retrieved by using the three-character AFOS identifier, and can be displayed on any graphic console screen. An overlay capability of three fields allows the forecaster to generate charts similar to those viewed on facsimile circuits. Any fields with compatible map backgrounds may be overlaid, so new analytical capabilities are available to the forecaster. For example, the 500-millibar heights can be overlaid on a surface chart. Or a previously produced prognostic chart can be overlaid on a current analysis for verification purposes.



Teletype Machine

The overlay capability of the graphic screens is enhanced by a series of controls. The forecaster can individually select the overlay fields to appear as solid, dashed, or dotted lines. A separate control of the intensity of the overlays is also available.

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Reanalysis of graphic products can be accomplished by drawing on a hard copy of the selected dispaly.

The Zoom control, with discrete settings of 1:1, 4:1, 9:1, 16:1, and 25:1 is available with all the graphic display screens. As the zoom is increased, a successively smaller area will fill the entire seventeen-inch display screen. The zoom will be especially valuable in viewing plotted surface data. As the map background is enlarged, more data will be plotted within the zoomed area. At the higher zoom ratios, more surface stations can be plotted than are currently available on facsimile.

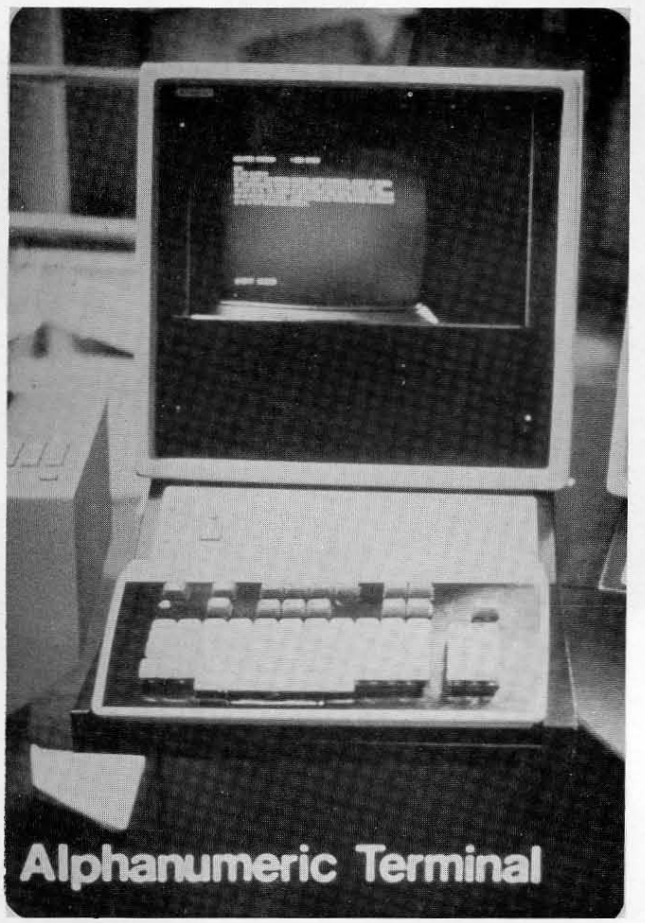
The message composition capability of the AFOS consoles will be the biggest time-saver for the forecaster.

To create a message, the forecaster first types in information identifying the product, the date and time, and instructions designating over which circuits it will be sent. Currently, the forecaster must be familiar with all the various headers for those circuits over which his product is to be transmitted. In AFOS he needs only to know the AFOS message header since the software takes care of inserting the proper header if the message is to go out on other circuits.

The forecaster has the choice in message composition either to use free text, or to use a preformatted text and just fill in the blanks. Preformatted texts can be especially useful in cases requiring a quickly issued product such as tornado warning. The forecaster also has the capability of creating his own preformats and storing them in the system.

AFOS also allows for simple and rapid editing of messages similar to the KCRT system now used in some forecast offices. The message being composed or, a pre-existing text, can be edited. This allows a forecaster to display a previously issued product, to edit it, and to issue it as a new product rather than starting from scratch. The forecaster can add or delete lines to the text, insert or delets characters, or erase and rewrite portions of the text.

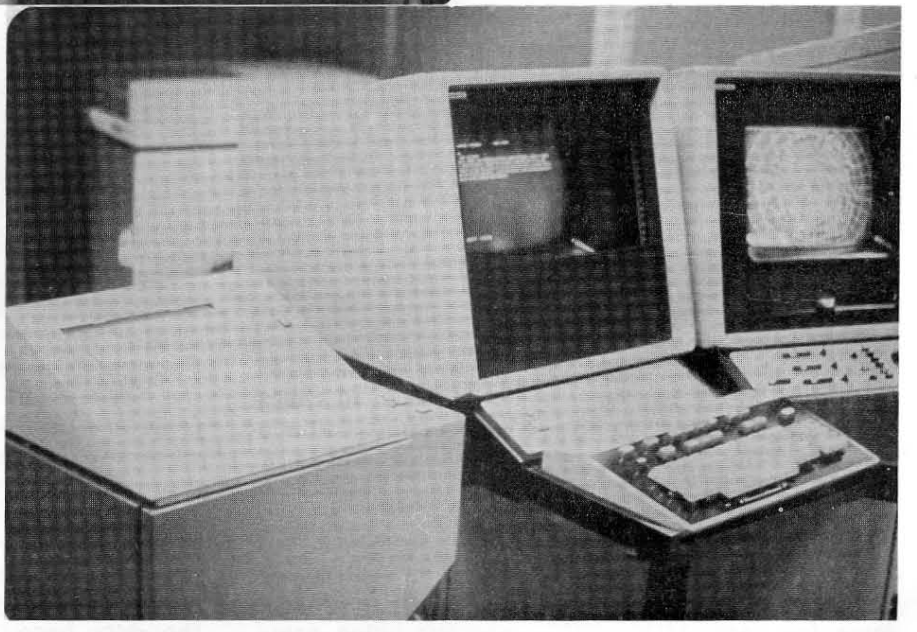
There are some added capabilities under AFOS that most forecasters will choose to use, such as the procedure capability. A software routine allows each forecaster to store a set sequence of alphanumerics and graphics to appear on screen. The foreaster can designate which screens the products will appear on, which fields will appear as overlays, and the order of display. When a forecaster comes on shift, he can call up his own procedure and brief himself by paging through the data. The forecaster can display those products he wants to appear rather than having to search



through data sequences. After the self-briefing the forecaster might call up products that he feels are pertinent to the weather situation that were not designated to appear in the generalized procedure routine. If the forecaster has decided on a tentative forecast before issue time, he may choose to store the forecast locally. Then, when it's time for the product to be sent out, he can, if no changes are to be made, just transmit it out of the data base. Or, if some changes are to be made, he can call up the product, edit it, and then transmit it. Another option would be for a forecaster to retain one screen as a "scratch sheet" in the forecast formulation stage. He could then type his final copy on an adjacent screen while referring to the "scratch sheet." Regardless of the procedure used by the forecaster to arrive at his forecast, he will have a longer period of time in which to formulate it. Due to the extensive editing capabilities in message composition and the speed of communications, the forecaster will be able to start typing his forecast just minutes before it is required for dissemination.

Once the message is completed the forecaster simply strikes the proper keys and the message is stored in the local data base, sent over the NDC/SDC and transmitted over any other designated circuits.

AFOS Console:
Alpha Numeric Display
Graphic Display



AFOS Console:
Alpha Numeric Display
Graphic Display
Printer/Plotter

Data entry into AFOS is similarly assisted by the use of preformats and editing. Several preformats are available for data entry, including surface aviation and synoptic preformats and others for radar observations. The observer retrieves the preformat, enters the required header information, fills out the preformat and then enters the observation for storage and transmission. AFOS automates most of the paper-oriented activities in the creation, delivery and archival of observational data, just as it does in the forecast area.

This is a quick overview of the AFOS working environment, when AFOS is fully implemented. What is the work environment like today in offices that have recently received AFOS equipment? Field installation of AFOS equipment started last May. Since then, these AFOS sites have been operating in a mixed-mode environment. The capabilities these first sites received are not complete in that all the capabilities needed for a true operational status are not there. The AFOS system has therefore, to this time, been used mostly as a learning and development tool.

As a result, the present situation at AFOS sites is a mixture of old and new. Data, in both alphanumeric and graphic formats, has started flowing through the NDC/SDC. At present, the timeliness and completeness of data is not at optimum level. Action is being taken to improve this situation.

Most of the techniques necessary for forecast composition have been provided. This includes the message composition capabilities, editing functions and sequencing capability mentioned earlier. Products can now also be transmitted over the NDC/SDC.

The most useful - and most used - AFOS feature to date has been composition of products. While teletypewriter and facsimile circuits are used for primary data collection, almost all AFOS offices regularly use message composition, editing and sequencing procedures in forecast formulation today. With the aid of a tape punch driven by the AFOS computer, a paper tape is obtained for disseminating products over existing teletypewriter circuits.

With the installation of AFOS Version 1, the capabilities of the system will be expanded to approximate those necessary to support total field operations. The criteria to meet this objective of total field support by AFOS have been identified and a series of tests arre being designed. These comprehensive tests will be conducted at selected field sites. Test sites will include Weather Service Forecast Offices, Weather Service Offices, Regional Headquarters and at least one River Forecast Center. The results of these tests will enable an evaluation to be made of how well the goal of providing capabilities for data and forecast formulation, composition, and dissemination has been met under a total AFOS working environment.

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part 2

SELS PRODUCTS & AFOS ALARM/ALERT*

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I will divide this presentation into two parts: the first and main part will describe the handling of SELS Watches/Warnings when AFOS is fully implemented; the second will deal briefly with the handling of Watches/Warnings during the interim period when AFOS is not fully implemented.

Each NWS product has an AFOS identifier -which is a group of 7 to 9 alphanumeric characters. The first three identify the issuing forecast office area; the second group of three identifies the product category; and the last one to three characters are a product designator - usually a location identifier. For example, a State Forecast issued by Topeka for Kansas would be identified as TOPSFPKS.

Four NSSFC products fall into the AFOS product category SEL (Severe Local Storm). These are:

1. AWW (Alert Weather Watch)
2. Watch (Severe Thunderstorm or Tornado)
3. Status Report
4. Cancellation

The reason for having all four products under one AFOS product category - SEL - is to make retrieval of all related severe weather products

*Presented at the Severe Local Storm Conference; Omaha, Nebraska; September 27-28, 1978.