

ORDER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

7032.3

11/9/83

AIR TRAFFIC SERVICE OPERATIONAL REQUIREMENTS FOR THE WEATHER
SUBJ: MESSAGE SWITCHING CENTER REPLACEMENT (WMSCR)

1. PURPOSE. This Order promulgates the Air Traffic Service operational requirements for the Weather Message Switching Center Replacement (WMSCR).

2. DISTRIBUTION. This Order is distributed to the branch level in the Washington headquarters, regional headquarters, Aeronautical Center, and Technical Center.

3. BACKGROUND.

a. Current System. The present Weather Message Switching Center (WMSC) collects, stores, and disseminates meteorological and NOTAM data. These tasks are performed via low-speed (75/300 BPS) and medium-speed (1200/2400 BPS) circuits. The circuits include a number of output-only circuits, however, the majority are two-way (input/output) communications. WMSC serves two basic types of networks:

(1) Service A - Primarily for the collection and/or dissemination of aviation meteorological and NOTAM data.

(2) Service C - Primarily for the collection and/or dissemination of basic meteorological data.

The existing WMSC serves a wide variety of users including the Federal Aviation Administration, Department of Defense, National Weather Service, airlines, and other commercial entities.

b. WMSCR System. The WMSCR shall interface directly with the National Meteorological Center (NMC), Aviation Weather Processor (AWP), National Airspace Data Interchange Network (NADIN), Consolidated NOTAM System (CNS), Coded Time Source (CTS), and the Maintenance Processor Subsystem (MPS) of the Remote Maintenance Monitoring System (RMMS). The WMSCR indirectly interfaces with the Flight Service Data Processing System (FSDPS) Model 2, current WMSC users, and the Central Weather Processor (CWP) via NADIN. The WMSCR shall be compatible with the direct interfaces on the physical link, network and message control level protocols and with the indirect interfaces on the network and message control level protocol. The WMSCR shall provide for redundancy with geographical separation to enhance maximum survivability from catastrophic failure. The WMSCR will

perform, as a minimum, all of the current functions of the WMSC less NOTAM processing, and will operate in a manner similar to the current WMSC, thus providing procedural transparency to the present WMSC users. The real-time store and forward system presently used will be carried over to the new system. Weather products and data from the NMC are transmitted to the WMSCR in two forms; alphanumeric and graphic. The WMSCR shall continue to provide storage of weather products for user request/reply functions. The WMSCR shall provide graphics data to the AWP and CWP from the NMC. The WMSCR shall be compatible with NADIN, AWP, CNS, and NMC. The WMSCR shall have the capability to support, directly or indirectly via NADIN, nonautomated FAA facilities and other non-FAA aviation users.

4. AIR TRAFFIC SERVICE WMSCR OPERATIONAL REQUIREMENTS. The Air Traffic Service will require the following from the WMSCR:

a. Message Processing. The WMSCR shall provide a number of message processing functions which include the following:

(1) Message Identification.

(a) The WMSCR shall have the capability to identify messages by type, origin, or a combination of both, including World Meteorological Organization (WMO) and International Civil Aviation Organization (ICAO), formatted data.

(b) WMSCR shall have the capability to breakdown and store, by individual type/location, collective formatted weather data.

(2) Message Error Detection and Correction. WMSCR shall validate each message segment received and, if in error, reject back to the source or display to the edit position for appropriate corrective action.

(3) Message Storage.

(a) The WMSCR shall store all alphanumeric and graphic data as received from direct interfaces; i.e., CNS, AWP, NADIN, and NMC.

(b) Message storage shall include the current technique of determining whether the data shall be appended to previous reports or shall replace the previous data.

(c) WMSCR shall include the ability to purge or retain data based on time of receipt.

(d) On-line data retention shall be based on individual report types, as presently performed by the WMSC.

(e) WMSCR capacity for storing alphanumeric data shall include the following:

- Provide for up to 150 separate domestic data types,
- Provide for up to 3000 location for each domestic data type,
- Provide for up to 5000 separate WMO bulletins.

(4) Message Routing. Distribute data requirements based on established time intervals and/or priority identification. Messages output from the WMSCR destined for the NADIN switch, AWP, CNS, and NMC through NADIN shall adhere to the appropriate format.

(5) Message Code and Format Conversion. Messages received at the WMSCR may undergo code and format conversion to satisfy WMSCR internal storage compatibility and direct interface requirements.

(6) Message Accountability. The WMSCR shall be able to provide message input/output accountability.

(7) Message Journalizing. WMSCR shall:

(a) provide a method for off-line messages and data journalizing which will ensure retention for a minimum of 15 days,

(b) record all data between the Start of Header (SOH) and the End of Text (ETX) characters,

(c) record number of characters or octets in the message text

(d) record number of characters in the message header,

(e) record date and time of message receipt including month, date, hour, minute, and second,

(f) record date and time of message transmission including month, date, hour, minute, and second,

(g) identify the channel/destination on which the message was received and/or transmitted,

(h) dispose of the message including, as a minimum, the following: normal transmission, normal intercept, overflow, or returned to originator, and

(i) respond to a retrieval request.

(8) Message Priority. In conjunction with message distribution and collection, the WMSCR shall utilize an operational order system of urgent, priority, and routine.

(9) Message Validation. The various fields shall be validated for proper report type designator and date/time groups. The WMSCR shall be capable of validating ranges of acceptable alphanumeric values.

b. Request/Reply.

(1) WMSCR request/reply service shall be provided which will give end users the ability to request and receive weather products not normally received.

(2) WMSCR shall have the capability to replenish the AWP or CWP in the event they lose their alphanumeric and/or graphic data bases as identified in FAA-2683/4/5B and FAA 2737 specifications.

(3) WMSCR shall have the ability to validate/nonvalidate requests/reply (R/R) access.

c. Statistical Collection and Processing. The WMSCR shall provide statistical information on system/network performance including an analysis of individual product activity, to identify inactive products or data.

d. Diagnostic Checks. Failure detection and reconfiguration shall generate operator notification.

e. Supervisory Functions. The WMSCR shall provide the capability for on-line modification of system collection/distribution tables.

f. Weather Data Editing. Information concerning messages received in error that are not returned to the sender shall be displayed at editing positions.

g. Intercept Function. The WMSCR shall be capable of initiating message intercepts to maintain formal control in the event of message transmission backlogs.

h. System Reconfiguration.

(1) The WMSCR shall be capable of 24 hours, 7 days per week operation.

(2) The WMSCR shall provide both failsafe and failsoft characteristics.

(a) Failsafe shall be provided when a unit or element automatically takes over for a failed component without degrading the system operation within 10 seconds.

(b) Failsoft shall be when no backup element or unit is available, but the system operates in a degraded mode. Restoral action shall commence in not more than 3 minutes.

(3) In the event of a complete system startup, the time period for an operational WMSCR shall not exceed 3 minutes. Included in this procedure shall be data base restoration capabilities.

i. System Expansion. Initial hardware/software configuration shall be such that a 100 percent expansion capability is possible without any changes in the design characteristics.

5. CHANGES. Suggested changes to this Order should be addressed to Director, Air Traffic Service, AAT-1, for the attention of Manager, System Plans and Programs Division, AAT-100, and contain complete justification/rationale for the change.



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