Chicago's O'Hare Runway Configuration Management System (RCMS)
Volume I - Description of the Operational Software

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EXECUTIVE SUMMARY

The operational software for the Chicago O'Hare Runway Configuration Management System (RCMS), described in Volume I, was prepared in response to operational requirements expressed by both facility and regional personnel from the Federal Aviation Administration (FAA) Great Lakes Region.

The software was developed for the three modes of operation -- the current mode, the planning mode, and the forecast mode. Each mode was designed to perform certain functions for an RCMS user.

The current mode is intended to be responsive to the existing airport conditions and the changes which may occur within a short period of time (for example, an equipment failure). The software examines configuration eligibility after any significant change in runway or equipment status to determine the impact on the current situation. The user is informed of this status through a screen of data which is refreshed without an operator's intervention.

The planning mode provides the user with the capability to plan equipment, runway, and weather changes throughout the facility day. It operates in concert with the current mode and forecast mode to prohibit undesirable reactions to current and future selected configurations.

The forecast mode offers an unrestrained examination of both configuration selection and plans. It enables the user to resolve conflicts before submitting the data to the current mode of operation.

This software was the starting point for the operational evaluation of the RCMS at the Chicago O'Hare Airport.

Volume II of this report, the user's guide, is organized by computer terminal operation, modes of operation, and external inputs (supporting programs) to RCMS.
1. INTRODUCTION.

1.1 PURPOSE.

This report describes the proposed Runway Configuration Management System (RCMS) operational software to undergo test and evaluation at the Chicago O'Hare Federal Aviation Administration (FAA) Tower Facility (ORD). It will also serve as an input to RCMS functional specifications for the Traffic Management System (TMS) program.

1.2 BACKGROUND.

RCMS is a planning tool for Chicago O'Hare International Airport. Using interactive computer logic, RCMS helps supervisors select runway configurations which reduce aircraft delays by optimizing throughput capacity in dynamic operational environments.

The formation of the O'Hare Delay Task Force, to identify the causes of and the potential solutions to air traffic delays at Chicago, provided the impetus for this system. MITRE Corporation conducted the initial RCMS effort as described in Federal Aviation Administration Report No. FAA-EM-82028 (Volumes I and II), dated October 1982. AEM-100 requested the FAA Technical Center to purchase a computer and to set up the system for evaluation by the Chicago O'Hare personnel. Later, the effort was expanded to make the system operationally acceptable to the facility personnel.
2. DISCUSSION.

2.1 RCMS DESCRIPTION.

RCMS incorporates both the operational requirements and improvements to three interconnected PL/1 software application programs developed by the MITRE corporation. The following describes the computer, the hardware, the software, and the data bases which comprise RCMS.

**Computer and Hardware Equipment.** RCMS consists of an IBM 4321 processor and the support equipment shown in figure 1. The computer runs under the Virtual Machine/Special Product (VM/SP) Operating System which is a user-oriented, time-sharing processor. Details of the final computer configuration will be documented when the system is installed at the facility. The computer hardware and the associated licensed software are maintained under contract with IBM.

**Software Programs.** The RCMS software is comprised of three different types of application programs: a background program, a foreground program, and several supporting programs.

The background software runs independently, that is, without a terminal operator or a user. As the executive program of RCMS, it interfaces with the other programs through the data bases.

The foreground program consists of user-oriented software which generates two types of screen data for facility personnel -- the write full screen (WFS) data and the static panel data. The WFS is refreshed every 2 minutes or is updated when a significant event occurs or when a panel changes. Users may alter the fixed panels but not the WFS panel.

**Data Bases.** The master data base, the WFS data base, the personal computer (PC) data base, and the forecast mode data base enable the software programs and the users to exchange data and to transfer results. Their contents are described in appendix A, RCMS Library.

The master data base is the main channel of communication for RCMS. It contains the updated information required by each program for the current and planning modes of operation. Protocol messages control the exchange of data. The background and foreground programs attach to and detach from this data base during their read and write functions. When accessing the master data base, each program assumes the responsibility of resolving the data.

The WFS data base is a one-way channel from the background program to a user program. It contains the screen data and the messages for the user viewing the Master Auto Panel (PF-1). There are three types of messages -- alerts, advisories, and ordinary -- which the user may display one at a time. Alerts and advisories are indicated via a ringing bell and/or the highlighting of screen data.

The PC data base provides the equipment status and readings to the background program through the master data base. The PC User program automatically updates the PC data base and resolves the master data base.

The forecast mode data base is very similar to the master data base. It is independent of all other data bases and provides a user the opportunity to exercise WHAT IF conditions in the forecast mode. Configurations, weather
conditions, and equipment outages can be planned for an entire day rather than an immediate look-ahead time. The entire day's demand data is available through a DEMAND file generated by a supporting program. Portions of the forecast mode data base -- selected configurations and revised planning logs -- can be inserted into the master data base for use in the current mode. The background program processes the data as user input and performs its normal functions to establish current conditions, determine configuration eligibility, and resolve the master data base.

Figures 2 and 3 show the relationship of the data bases to the software programs and to the modes of operation.

2.2 BACKGROUND PROGRAM OPERATION.

The current background program controls the flow of data among all users, determines configuration eligibility, generates messages for the users, and either accepts or rejects a plan submitted by a user. The following sections describe the operation of the current background program for the current and planning modes. There is a separate background program for the forecast mode, called the forecast background program; its special features enable the user to exercise WHAT IF conditions.

2.2.1 Auto Startup and Restart.

The background program is designed to run without the intervention of a user. It is initialized by the computer operator and then placed in a wake-up mode. If the program does stop for some reason, a restart feature enables the operator to resume the operation with the existing master data base rather than the initial data.

2.2.2 Software Routines and Functions.

The current background program operates every quarter-hour or when activated by a wake-up call if a significant event occurs. The flowchart for the current background program is shown in figure 4. The PC program and assorted supporting programs resolve the appropriate data bases and pass information to the users via the master data base. Application of the sensor data to the RCMS logic is shown in appendix B.

The background program determines the eligibility of 62 configurations -- a maximum of 80 may be defined. A conflict occurs if a selected configuration is ineligible. The user is alerted if current conditions cause the conflict; he can then review a list of alternate eligible configurations. If new planning data generates a conflict, the plan is rejected and the plan is reset to the previous acceptable plan.

During the execution of the current background program, ordinary and advisory messages are generated for the user. Management of the data bases guarantees continually updated data and acceptable inputs from the users and the supporting programs. Table 1 describes the critical routines in the current background program.
### TABLE 1. CRITICAL ROUTINES FOR CURRENT BACKGROUND PROGRAM

<table>
<thead>
<tr>
<th>ROUTINE</th>
<th>DESCRIPTION</th>
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<tr>
<td>ADDPLAN</td>
<td>Adds plans to work tables APTSTAT(96) &amp; PEQUIP(96) from PLAN(96).</td>
</tr>
<tr>
<td>ASMDISC</td>
<td>Assembly program to run the background program in disconnected mode.</td>
</tr>
<tr>
<td>ASSLNK2</td>
<td>Assembly program to link to the WFS data base.</td>
</tr>
<tr>
<td>ASSLNK7</td>
<td>Assembly program to link to the master data base.</td>
</tr>
<tr>
<td>ASSULK2</td>
<td>Assembly program to unlink from the WFS data base.</td>
</tr>
<tr>
<td>ASSULK7</td>
<td>Assembly program to unlink from the master data base.</td>
</tr>
<tr>
<td>BACKGR4</td>
<td>Main procedure in the current background program.</td>
</tr>
<tr>
<td>BLDPLAN</td>
<td>Builds PLAN(96) from planning logs &amp; sets PSTATUS (planning status).</td>
</tr>
<tr>
<td>CLEAR96</td>
<td>Clears 96 bins in APTSTAT &amp; PEQUIP.</td>
</tr>
<tr>
<td>CMPMSG</td>
<td>Generates runway composite messages.</td>
</tr>
<tr>
<td>CTIME</td>
<td>Converts quarter-hour to four-character time (HHMM).</td>
</tr>
<tr>
<td>CTIME4</td>
<td>Converts four-character time (HHMM) to quarter-hour.</td>
</tr>
<tr>
<td>CURMSG</td>
<td>Generates current messages (planned and unplanned) using runway and equipment status codes in APTSTAT &amp; PEQUIP.</td>
</tr>
<tr>
<td>ELIG</td>
<td>Determines configuration eligibility for the quarter-hour.</td>
</tr>
<tr>
<td>GENA</td>
<td>Generates alert and advisory messages.</td>
</tr>
<tr>
<td>GENQ</td>
<td>Generates quarter-hour messages for PF-4.</td>
</tr>
<tr>
<td>GETMINS</td>
<td>Initializes the arrival runway minimums in RWYMIN.</td>
</tr>
<tr>
<td>INITOLD</td>
<td>Saves a copy of the master data base.</td>
</tr>
<tr>
<td>MINIMA</td>
<td>Calculates arrival runway minimums for the quarter-hour.</td>
</tr>
<tr>
<td>MLOOP</td>
<td>Performs &quot;do loop&quot; for nine quarter-hours to calculate eligibility.</td>
</tr>
<tr>
<td>MODUP</td>
<td>Computes current time and controls plan building, plan testing, data base management, eligibility logic, and message generation.</td>
</tr>
<tr>
<td>NFWDAY</td>
<td>Clears data base. Initializes equipment status, trigger values, and configuration data.</td>
</tr>
</tbody>
</table>
TABLE 1. ROUTINES FOR WFS TASK D.I.

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<thead>
<tr>
<th>ROUTINE</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>REALM</td>
<td>Reads the master data base.</td>
</tr>
<tr>
<td>REFRESH</td>
<td>Reads master data base into temporary storage.</td>
</tr>
<tr>
<td>SPICE</td>
<td>Sets current data into APPEL.</td>
</tr>
<tr>
<td>ISPITAN</td>
<td>Tests a plan by calculating conditions.</td>
</tr>
<tr>
<td>UPDAREM</td>
<td>Resolves current &amp; planning panels.</td>
</tr>
<tr>
<td>WFILE</td>
<td>Generates the WFS data and writes it to the master data base.</td>
</tr>
<tr>
<td>WRITEF</td>
<td>Writes to the master data base.</td>
</tr>
<tr>
<td>WRITEWS</td>
<td>Assembly program to write the WFS data base.</td>
</tr>
</tbody>
</table>

2.2.3 Configuration Eligibility Processing.

Configuration eligibility is determined for 4 quarter-hours -- the current quarter-hour and each quarter-hour during the next 3 hours (Figs. 4-14). The background program constructs 96 bins of information representing the airfield conditions for each quarter-hour in the facility day. It assumes that the current airfield conditions will continue through the entire day. As planned activities and changes are introduced, they overlay the existing conditions for the appropriate quarter-hours.

The background program then determines eligibility based on runway closures, arrival runway minimums which are affected by equipment outages, surface and braking conditions, and weather conditions (CAB ceiling and CAB visibility). The eligibility status and the reasons for ineligibility are inserted in the master data base.

A message on the WFS panel alerts the user when a selected configuration becomes ineligible. Portions of the WFS are highlighted to help the user resolve the problem. For example, if an arrival runway in the current configuration is closed, three areas of the screen are highlighted -- the menu item for PF-7 (runway conditions panel), the alert message "CURRENT CONFIGURATION IS INELIGIBLE AT 1300 DUE TO CA" and the word "CURRENT" in the configuration description at the top of the screen.

2.3.4 Message Processing and Handling.

Alerted messages are generated and/or updated by the background program. Table 2 describes the message types and their location on the panels. Message packets are distributed within the master and WFS data bases, is a separate function from the message generation.
The background program adds or refreshes messages in the data bases during each update cycle. The protocol messages (table 3) are placed in the message line area of the user's screen. In the current mode, they contain the update time and the user's identification. In the planning and forecast modes, they provide the plan status and prevent other users from modifying an unresolved plan.

### TABLE 2 MESSAGE TYPES

<table>
<thead>
<tr>
<th>MESSAGE TYPE</th>
<th>LOCATION ON THE PANELS</th>
</tr>
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<tbody>
<tr>
<td>1. Alert Message</td>
<td>PF-1 Master Auto Panel Message Line</td>
</tr>
<tr>
<td></td>
<td>PF-4 Message Panel</td>
</tr>
<tr>
<td>2. Planned Configuration</td>
<td>PF-1 Master Auto Panel Message Line</td>
</tr>
<tr>
<td></td>
<td>PF-4 Message Panel</td>
</tr>
<tr>
<td>3. Quarter-Hour Messages</td>
<td>PF-1 Master Auto Panel Message Line</td>
</tr>
<tr>
<td></td>
<td>PF-4 Message Panel</td>
</tr>
<tr>
<td>5. New Planned Outages</td>
<td>PF-1 Master Auto Panel Message Line</td>
</tr>
<tr>
<td>6. New Current Outages</td>
<td>PF-1 Master Auto Panel Message Line</td>
</tr>
<tr>
<td>(Equipment or Runway)</td>
<td>PF-4 Message Panel</td>
</tr>
<tr>
<td>7. Current and Planned</td>
<td>PF-4 Message Panel</td>
</tr>
<tr>
<td>Runway or Equipment Outages</td>
<td>PF-7 Runway Conditions Panel (Scroll Area) or</td>
</tr>
<tr>
<td>(Historical Information)</td>
<td>PF-8 Equipment Panel (Scroll Area)</td>
</tr>
<tr>
<td>8. Runway Composite Messages</td>
<td>PF-1 Master Auto Panel</td>
</tr>
<tr>
<td></td>
<td>PF-2 Master Panel (Scroll Area)</td>
</tr>
<tr>
<td>9. Runway Remarks</td>
<td>PF-3 Current and Planned Eligible Configurations</td>
</tr>
<tr>
<td>10. Reasons for Configuration</td>
<td>PF-9 Current and Planned Ineligible Configurations (Selected from PF-3)</td>
</tr>
<tr>
<td>Ineligibility</td>
<td></td>
</tr>
<tr>
<td>11. Planned Weather Change</td>
<td>PF-3 Current and Planned Eligible Configurations (Next Change)</td>
</tr>
<tr>
<td></td>
<td>PF-6 Weather Panel (Next Three Changes)</td>
</tr>
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</table>
TABLE 3. MESSAGE LINE PROTOCOL

CURRENT MODE
1. "Screen Updated by [User ID] at [Time]"

PLANNING & FORECAST MODES
5. "[User ID] Controls Plan [User ID] Plan Accepted [Time]"

Notes
[User ID] is either AT, AF or CAB
[Time] is Hours, Minutes (HHMM) -- GMT

2.2.5 Data Base Management.

A data base is controlled when it is accessed to transfer information. The foreground program reads and displays the WFS data base which is written by the background program. The foreground program reads and writes only that part of the master data base required for the panel the user is displaying or modifying. The background program reads and writes the entire master data base. The current and planning data is resolved when a user changes a panel or when the background program accesses the master data base.

For the current data, the background program applies the hierarchy of information (table 4) to the current data and to the master data base. It resolves conflicting data by determining what changes occurred since the last update and by applying the most critical condition to the data. Each user resolves the current data in a similar way.

Planning data is rigidly controlled by a protocol between a user and the background program. Plans, submitted by a user from a planning log, are accepted or rejected by the background program based on the eligibility of the selected configurations. No user may enter a plan controlled by another user. The background program maintains the integrity of the master data base by replacing the rejected plan with the previously acceptable plan. The user is prohibited from changing screens until the plan is either accepted or rejected.

Forecast data is controlled just like planning data, with these two exceptions. While a user is in the forecast mode, no other user may modify any planning log or any forecast planning log. A user may force a forecast planning log submission into the current mode; that data will be accepted unconditionally.
TABLE 4. RESOLUTION OF CURRENT INFORMATION

DEFINITION OF STATUS VALUES

'b' (Blank) - Equipment or Runway Available

'X' - Equipment Monitor Detection of Out-of-Service

'F' - Equipment Monitor Detection of Failure

'O' - Equipment or Runway Removed-from-Service by User (User has Overwrite Capability)

'R' - Equipment or Runway Returned-to-Service in Plan

'I' - Equipment or Runway Put In-Service by User (User has Overwrite Capability)

'P' - Planned Equipment or Runway Out-of-Service

'N' - CAT Operations not Available

'Y' - CAT Operations Selected by User

PRIORITY OF CURRENT STATUS VALUES

'b' Replaces 'X' and 'F' (Previous PC Status)

'X' and 'F' Replaces 'b'

'P' Replaces 'b', 'X', and 'F'

'R' Conflicts with 'O' in Current Quarter-Hour

'P' Conflicts with 'I' in Current Quarter-Hour

'I' Replaces all others *

'O' Replaces all others *

'N' Replaces 'Y'

'Y' Replaces 'b'

*Only designated users on selected panels have this overwrite capability.

RESOLUTION OF CURRENT STATUS VALUES

1. The priority of current status values is applied whenever the master data base is accessed (e.g., when a user enters new data on a panel).

2. If an 'I' or an 'O' is removed by a user, then 'b', 'X', 'F', and 'P' priority determines the new value.

3. If an 'I' or an 'O' is changed in master data base by designated user, then the master data base entry holds for the current data. (A user may not view a current panel for an extended period of time without considering the effects of changes occurring in the interim time period.)
2.3 FOREGROUND PROGRAM OPERATION.

The foreground program controls the panels selected by and presented to the user. In addition to displaying current data, it enables the user to submit plans for operating the airport and to select current and future configurations throughout the day. The following describes its operation.

2.3.1 Logon Functions and Software Routines.

A user can logon to the software program designed for a particular position or area of responsibility (AT, CAB, AF, etc.). A built-in executive routine starts the program which displays the WFS (PF-1) or the user's primary panel. Each user can select most of the screens, but a user may not need the full capabilities of the foreground program. Therefore, individual user programs will be constructed after the facility personnel provide their recommendations on panel formats and program operation.

The user controls the panel selection through program function (PF) keys. A PF key menu appears on each panel as a quick reference for the user; the function of a particular PF key may change from panel to panel. A cursor function enables the user to enter panel data and a scroll function permits the user to view additional messages or data. A message line on the bottom of the screen provides the status of the panel (update time, planning status, input errors, etc.)

The flowchart of the foreground program is shown in figures 6A and 6B. Appendix C contains the following foreground program documentation -- the PL/1 and assembler language programs used in the foreground user programs, the calling sequence of the programs in the foreground user, and the list of panels and their associated PF keys.

2.3.2 User Modes of Operation.

The foreground program has three modes of operation: current, planning, and forecast. Selection of a PF key initiates the appropriate mode of operation. The protocol messages on the current and planning panels establish communications among the users and between the foreground and the background programs. Protocols for all modes of operation regulate the access and transfer of data in the master data base (table 3).

Current Mode.

The current mode is the normal mode of operation. Typically, the user views the WFS data which is automatically updated every 2 minutes or whenever something significant occurs. The user remains in current mode when selecting a current panel with the PF key. However, a static panel is displayed and no update occurs until the user hits a PF key -- either the same key or another key.

Data entered through a current panel is checked for format errors. If it contains no errors, the data is then resolved with current data, PC data, and planning data. Then the background program is activated to determine configuration eligibility and to generate appropriate messages.
Planning Mode.

The planning mode is entered through the planning/forecast selection panel. The PF-12 key enables the user to submit planning data directly to the current mode, through the master database, from any of three planning logs -- weather, runway closure, or equipment.

Unlike the current mode, the user controls the planning panels upon entering the planning mode. No user may enter a plan which another user controls. Once the user submits a plan, he must remain on that panel until the background program determines the plan's acceptability. If the new plan causes a selected configuration to become ineligible within 9 quarter-hours, it is replaced with the previously accepted plan; otherwise, the plan is accepted.

The planning mode logic is straightforward. If a new plan is entered by a user, a complete recycle of the entire day's activities takes place. The new plan is broken down and reassembled in a time-ordered pattern intermixing all three planning panel inputs. This overall plan is then tested to determine if it generates a conflict within 9 quarter-hours. If there is a conflict, the overall current conditions are reconstructed with the previously acceptable plan. Resolution of the overall plan is a user task. If the user cannot pinpoint the problem to a specific item in the plan, he may employ the forecast mode. Within the forecast mode, all plans are accepted and screen data further defines the source of the conflict.

Forecast Mode.

The forecast mode uses a separate forecast background program to allow the user full access to the existing database in an off-line environment. All the planning functions are available without interfering with the current background and other user foreground programs.

The forecast mode is executed through a specific control panel. It permits the user to communicate directly with another user and to operate independently of the current mode, the master database, and the background program. The user may insert runway conditions, equipment outages, and weather conditions throughout the facility day using the planning panels. Once a compatible plan and eligible configurations are generated in the forecast mode, the user may forward the new selected configurations and plans to the current mode through the control panel. Then the user is notified of the current mode's acceptance or rejection of the submitted data based on the eligibility of the selected configurations. In addition, designated users have the option of forcing the revised plans and configurations into the current mode. Submissions are made through positive action by the user; a default submission returns to the current data and previous plans.

Selection of the master auto panel (PF-1) cancels the forecast mode and returns the user to the current status panel. The user does not have to submit forecast data or save forecast data.

The forecast mode logic depends on user selections (for example, today's forecast or a forecast for another day). The user can work with another user or work independently. The look-ahead start time can be specified for the forecast session. In addition, re-entry selections to the current background program can include the submission of plans and/or configurations for the entire day's activities.
The forecast mode has its own panels. The user can view and arrange the entire day's activities, look at the day's demand data, and review configuration selection and eligibility for any quarter-hour. The user can change configurations or plan equipment outages to determine if any conflicts occur over extended time periods. By coordinating with others, the user can resolve the day's plans with some assurance of operational compatibility.

The configuration eligibility process in the forecast background program is identical to the eligibility process in the current background program with one exception; it covers up to 96 quarter-hours (from the selected look-ahead time to the end of the day).

### 2.3.3 Panel Descriptions and User Functions

The panels shown in figures 7 to 32 comprise the user's interaction with RCMS. The user function associated with the panels is explained in the following subsections. However, there are some common functions for the panels; namely, scrolling, entering data into the data base, and recalling the original data after typing in new data.

The scroll function is initiated by hitting the ENTER key. Panel data is entered into the master data base through the PF-12 key. If a user types in data and wishes to see the original data, the PF-11 RECALL key returns the screen to its initial state. All panels contain a menu of PF keys available to the user, some of which have different functions on different panels. The panels are described below.

**Master Auto Panel (PF-1).**

The master auto panel (figure 7) summarizes the airfield conditions and displays composite messages for the active runways. No user inputs are allowed. The screen is updated every 2 minutes or when a significant event occurs. Alerts, advisories, and any ordinary messages are displayed on the message line. The user can scroll through the advisory and ordinary messages by pressing the "enter" key. Alert messages are forced onto the screen along with highlighted areas pertaining to the causes of any conflicts. The user may select any panel listed in the menu of PF keys.

**Master Panel (PF-2).**

The master panel (figure 8) is a static display of the master auto panel with some differences. The user can enter a 30-character note under the NOTE PAD heading, adjacent to the arrival runway minimums. A scroll function enables the user to examine composite messages for all 12 runways.

**Configuration Panels (PF-3 and PF-9).**

The eligible current configuration panel (figure 9) displays all eligible configurations available to the user through the scroll function. It also contains abbreviated remarks concerning the runway conditions and equipment status. If there is a planned weather change within an hour, a message will appear near the bottom of the screen. The planned eligible configuration panels for the next 5 quarter-hours provide the same information and options. The PF-3 key enables the user to advance the screen to the next quarter-hour.
The eligible configurations are listed in order. Appearing first are those configurations with the same runway headings (flow direction) as the selected configuration. If the capacity satisfies the demand, if the configuration has no wind condition, and if the configuration is not affected by Midways' operations, the configuration is highlighted. The highlighted configurations are the recommended configurations. The remaining configurations are listed in the order of the clockwise flow direction within a given flow direction, the simplest configurations (from an operational aspect) appear first.

If no configurations (with the same flow direction as the selected configuration) are recommended (highlighted), the foreground program highlights the eligible configurations in the next clockwise flow direction which satisfy the capacity, wind, and Midway requirements.

The user may select a new eligible configuration by typing the desired configuration number on the screen and by using the PF-12 key to enter the data.

If the user selects a new configuration, the foreground program automatically updates succeeding quarter-hours throughout the day. This update follows these rules to insure that user selections are maintained in the RCMS.

a. The newly selected configuration replaces only the old configuration selection in each quarter-hour. A planned configuration change in any quarter-hour will remain in that quarter-hour and no further changes will occur after that time.

b. The configuration selected by the user must be eligible for at least an hour. Beyond that hour, configuration eligibility is not a factor in configuration selection. For example, if a new configuration is selected for the second quarter-hour and there are no planned configuration changes, the new configuration will be entered from the second quarter-hour to the end of the day. However, an alert message will be generated if the configuration becomes ineligible.

With the PF-9 key, the user may view the list of ineligible configurations for each quarter-hour (figures 11 and 12). Reasons for the ineligibility are included for each configuration. No user inputs are allowed on this panel.

User Message Panel (PF-4).

The user message panel (figure 13) displays up to 20 recent alert and advisory messages and up to 60 current equipment and runway messages, accessible through the scroll functions. No user inputs are allowed on this panel.

Demand Panel (PF-5).

The demand panel (figure 14) shows the arrival and departure demand for the next six hours. The data is broken down into eight quarter-hour periods and six hour-long periods. The traffic demand is displayed for each arrival and departure fix, and for three aircraft categories under each arrival fix (total, number of heavy, and number of light). No user inputs are allowed on this panel.

Weather Panel (PF-6).

The weather panel (figure 15) allows the user to enter current weather, forecast weather, CAB ceiling, and CAB visibility. The CAB visibility and CAB ceiling are
some of the criteria for the configuration eligibility. Repeating the PF-6 key displays the local weather forecasts (figure 16).

Runway Conditions Panel (PF-7).

The runway conditions panel (figure 17) allows the user to take a runway out of service (OTS) or to indicate the surface and braking conditions for the airfield. A local remarks area is provided for runway-related comments. The user may scroll through 36 messages which give both current and planned runway outages.

Equipment Panel (PF-8).

The equipment panel (figure 18) contains the equipment status and the arrival runway minimums. The user may enter an overwrite character ("I" for in-service, "O" for out-of-service). A field may contain an existing out-of-service "X" detected by the 3270 PC interface equipment or it may be blank (in-service). When the data is entered, new arrival runway minimums are calculated and displayed.

A "Y" (yes) may be entered for CAT II and CAT III operations to indicate the runway is in that mode operation. An "N" indicates the operation is not available due to an equipment outage. The user can examine up to 60 messages concerning current and planned equipment outages by employing the scroll function.

Trigger Value Panel (PF-9).

The trigger value panel (figure 19) allows the user to set various parameters as boundaries above which the background program generates advisory messages.

The user can select crosswind and tailwind advisory levels for both arrivals and departures. A message is generated when one of these thresholds is exceeded.

The warning times for some messages (equipment OTS and RTS, runway OTS and RTS, and planned configurations changes for various reasons) can be specified by the user. These times determine when the user is advised of the upcoming event.

Triggered advisory levels for various parameters (demand, wind, ceiling, visibility, and RVR readies) can be preset by the user. A message is generated when the particular threshold is exceeded. Asterisks (***') indicate that the trigger value was exceeded since it was last set by the user.

Planning/Forecast Selection Panel (PF-10).

The planning mode can be entered directly from the planning/forecast selection panel (figure 20). The weather, runway closure, and equipment planning logs are shown in figures 21, 22, and 23.

On the planning panel, the plan can be submitted directly to the back-end program for acceptance or rejection in the current mode.

The weather control panel (figure 24) provides the user with a variety of options. Dealing with the editing of the forecast mode data base, reviewing and changing weather over a seven-day period, testing today's activities, returning to the previous type of weather (stored version of today's forecast), or submitting data to the weather data base in the current mode.
Upon entering the forecast mode, the operator may select the master data base for "today's" activity or the day file for "today." The user may also choose another day file (for any day within the next six days) to plan outages and select configurations.

After selecting an initial option using the PF-12 key, a summary of the day's configurations is presented along with their eligibility status. A selected start time may be entered so the user can examine any six quarter-hours in detail or change the selected configurations.

If the user selects "today's" activity, the master data base is read into the forecast mode data base and the user controls all planning logs. While in the forecast mode, the user can access any planning log. After changing a planning log, the user can enter it into the forecast mode through the PF-12 key. This WHAT IF option has no constraints; the user can resolve conflicts (configuration ineligibility) by changing configuration selections and/or planned outages. After resolving the conflicts, the user may re-enter the plan or submit all the plans and selected configurations to the current mode through the forecast control panel (PF-10).

The background program treats any submission from the forecast mode as a plan to be accepted or rejected. If the user specifies a forced entry on the control panel, the current background program unconditionally accepts the plan and generates alert messages if any selected configurations are ineligible within 9 quarter-hours.

The following panels are available to the user in the forecast mode:

a. **Forecast Status Panel (PF-2).** This panel (figure 25) summarized the weather, runway conditions, and equipment status of the particular quarter-hour selected by the user.

b. **Forecast Configuration Panel (PF-3).** This panel (figure 26) is identical to the eligible configuration panel in the current mode, except it contains both eligible and ineligible configurations.

The configurations are listed in order. Appearing first are those configurations with the headings (flow direction) that best satisfy the eligibility, wind, ca and Midway requirements. If the configuration is eligible, if the flow action is best for the wind direction and speed, if the capacity satisfies and, if the configuration has no wind conditions, and if the configuration is not affected by Midways' operation, the configuration is highlighted. The highlighted configurations are the recommended configurations. The remaining configurations are listed in order of the clockwise flow direction. Within a given flow direction, the simplest configurations (from an operational aspect) appear first.

c. **Forecast Demand (PF-5).** This panel (figure 27) is identical to the demand panel in the current mode, except it describes the conditions starting at the quarter-hour selected by the user.

d. **Forecast Planning Logs (PF-6, PF-7, and PF-8).** The forecast planning logs for the weather, runway closure, and equipment accept user input in any order (figures 28, 29, and 31). The software does the appropriate sorting. Users may input 16 weather items, 16 runway closure items, and 31 equipment
items. The USERID is inserted in the log. If the plan is accepted, the ACCEPT TIME is placed next to each entry.

2.4 SUPPORTING PROGRAMS.

The following supporting programs are employed by the RCMS operational software to automate inputs and/or coordinate activities with distant data sources.

2.4.1 Central Flow Control Facility.

The Central Flow Control Facility will be requested to send the demand data for the Chicago O'Hare Airport every hour. This data will contain the aircraft call sign, the aircraft type, the arrival fix, the departure fix, the estimated time at the arrival fix, and the estimated gate departure time. The DEMAND user will process the data, write it to the master data base, and generate a file containing the entire day's demand for the forecast mode. The Central Flow Control Facility will also have access to all data base information.

2.4.2 PERSONAL COMPUTER (PC3270).

The PC user program collects the status and equipment readings from the Facility Sensor Equipment (figure 31); this data is written to the PC data base and resolved in the master data base for the current background program. In some cases, this process utilizes averaging techniques and rejects unconfirmed data. The PC data base and the master data base are updated periodically or whenever the PC program determines there is a significant change in newly acquired data.

2.4.3 City of Chicago.

The City of Chicago is treated like another foreground user. When the city submits new panel data, the program creates a file which is compatible with their present television screen distribution system. Using a PC program, city personnel can transfer this file, through a keyboard interface device, to the existing TV displays. This permits consistent interpretation of data for both systems.

The City of Chicago RCMS interactive screens include the runway conditions panel (PF-7), the equipment panel (PF-8), and the runway closure and equipment planning logs. In addition, a taxiway/notam panel (figure 32) is accessible from the runway conditions panel and the equipment panel to describe the status of the taxiway system. The taxiway/notam panel can be viewed by selecting the PF-9 key from the PF-7 or PF-8 panel.

2.4.4 Weather Data.

The presentation of weather information and its processing within the RCMS software program depends upon the origin and type of data. There are three sources of weather data: the manual entries into the RCMS panels, the 3270 PC sensor interface, and the National Weather Service (NWS) interface via the Center Weather Service Unit (CWSU).

Table 5 describes the weather data, its source, and its mode of operation within RCMS. Table 6 describes the application and mode of operation for each type of weather information.
The weather information is applied in the RCMS software to:

a. Determine the eligibility of current and planned configurations.

b. Advise the user of weather conditions by presenting both the weather information and triggered advisories for specified conditions.

c. Construct a weather planning log.

In the current mode, RCMS uses CAB ceiling and CAB visibility to determine configuration eligibility. In the planning/forecast mode, it uses the CAB ceiling and visibility, modified by the weather planning/forecast log entries, to determine eligibility.

RCMS generates a wind comment for an eligible configuration when there are excessive crosswinds or tailwind for a runway in the configuration. The planning/forecast mode uses the centerfield wind, modified by the wind entries in the weather planning/forecast log.

Triggered advisories are generated when CAB ceiling or visibility changes or when crosswinds, tailwinds, or PC sensor data (for wind, ceiling, RVR readings) exceed a level preset by the user.

The weather forecast log can be changed by manual entry of planned weather or by automatic entry of the ORD FT reports. At the user's request, RCMS translates the ORD FT weather reports into wind, ceiling, and visibility entries in the weather forecast log.

The NW3 provides several types of reports: SA (Surface Observations), FT (Terminal Forecasts), and SW (Selected Weather Warnings). Included in the SW reports are AWW (Severe Weather Forecast Alerts) and WST (Convection Segments). An attempt will be made to have the weather data updated when special bulletins are issued. This arrangement demands upon the session level interface currently being defined with the Center Weather Service Unit.

2.4.5 Remote Terminal.

The remote terminal for the RCMS can support program development throughout the RCMS effort. A software programmer can develop and test an application program before introducing it into the operational environment.
<table>
<thead>
<tr>
<th>SOURCE OF DATA</th>
<th>DEFINITION OF WEATHER DATA</th>
<th>MODE OF OPERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>WX Panel (from CAB)</td>
<td>Ceiling and Visibility</td>
<td>Current</td>
</tr>
<tr>
<td>WX Planning Log (from AT &amp; CAB)</td>
<td>Planning Ceiling, Visibility, and Wind</td>
<td>Planning</td>
</tr>
<tr>
<td>WX Forecast Log (from AT &amp; CAB)</td>
<td>Forecast Ceiling, Visibility and Wind</td>
<td>Forecast</td>
</tr>
<tr>
<td>3270 PC Interface (Automated Inputs from Field Equipment)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LLWAS Field Ceilometer</td>
<td>Center Field Wind</td>
<td>Current</td>
</tr>
<tr>
<td>RVR</td>
<td>Computer Ceilometer Reading</td>
<td>Current</td>
</tr>
<tr>
<td>DASE</td>
<td>Runway Visual Range Reading</td>
<td>Current</td>
</tr>
<tr>
<td></td>
<td>Digital Altimeter Reading</td>
<td>Current</td>
</tr>
<tr>
<td>NWS Interface via CWSU (Computerized Weather Reports)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA Reports</td>
<td>ORD - Surface Weather Report</td>
<td>Current</td>
</tr>
<tr>
<td>FT Reports</td>
<td>ORD - Terminal Forecast</td>
<td>Forecast</td>
</tr>
<tr>
<td>SA Reports</td>
<td>Nearby Airports Weather Report</td>
<td>Current</td>
</tr>
<tr>
<td>FT Reports</td>
<td>Nearby Airports Forecast</td>
<td>Forecast</td>
</tr>
<tr>
<td>AWW Reports</td>
<td>Severe Weather Forecast Alerts</td>
<td>Forecast</td>
</tr>
<tr>
<td>WST Reports</td>
<td>Convection Segments</td>
<td>Current</td>
</tr>
<tr>
<td>APPLICATION</td>
<td>MODE OF OPERATION</td>
<td>SOURCE OF DATA</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Current Configuration Eligibility</td>
<td>Current</td>
<td>CAB Ceiling and Visibility</td>
</tr>
<tr>
<td>Planned/Forecast Configuration Eligibility</td>
<td>Planning /Forecast</td>
<td>CAB Ceiling and Visibility modified by weather planning/forecast log</td>
</tr>
<tr>
<td>Wind Comment for Eligible Configurations</td>
<td>Current</td>
<td>LLWAS Center Field Wind resulting in excessive crosswinds and tailwinds for a runway in the configuration</td>
</tr>
<tr>
<td>Wind Comment for Eligible Configurations</td>
<td>Planning /Forecast</td>
<td>LLWAS Center Field Wind modified by weather planning/forecast log, resulting in excessive crosswinds or tailwinds for a runway in the configuration</td>
</tr>
<tr>
<td>Weather Information for RCMS Panels</td>
<td>Current</td>
<td>NWS computerized weather reports for ORD and nearby airports</td>
</tr>
<tr>
<td>Triggered Advisories</td>
<td>Current</td>
<td>3270 PC equipment by RCMS generated readings reaching preset trigger values for wind, ceiling, RVR, crosswind, tailwind -- or -- any change in CAB ceiling or visibility</td>
</tr>
<tr>
<td>Weather Planning Log</td>
<td>Planning</td>
<td>Manual entry</td>
</tr>
<tr>
<td>Weather Forecast Log</td>
<td>Forecast</td>
<td>Manual entry or automatic entry of planned weather and ORD F7 reports</td>
</tr>
</tbody>
</table>
**Figure 1.** Runway Configuration Management System Equipment
FIGURE 2. RELATIONSHIP OF DATA BASES TO SOFTWARE PROGRAMS
Figure 3. Relationship of data bases to modes of operation
DO YOU WANT TO RUN IN AUTOMATIC MODE?

IS THIS A NEW DAY?

CALL NEW DAY

CALL RESTART

CALL GETMINS
CALL CLEAR 96
CLEAR STRUCTURE ORDIN

INITIALIZATION

CALL MODUP (INITIAL LOOP)

CALL MODUP
AFTER WAKE UP CALL

CALL ASMDISC (AFTER NEXT QUESTION)

CALL ASSSLNK7
CALL READM
CALL BLD PLAN
CALL TST PLAN (IF NEW PLAN)
CALL M LOOP
CALL ASSULK7
WAKE UP CALL INITOLD
IF NEW QUARTER-HOUR, SET QTR-HR COUNTER & CALL SETCUR

FIGURE 4. CURRENT BACKGROUND PROGRAM FLOWCHART

COMPUTE TIMENOW
CALL ASSSLNK7
CALL READM
CALL BLD PLAN
CALL TST PLAN (IF NEW PLAN)
CALL M LOOP
CALL ASSULK7
CALL READM
CALL BLD PLAN
CALL TST PLAN (IF NEW PLAN)
CALL M LOOP
CALL ASSULK7
WAKE UP CALL INITOLD
IF NEW QUARTER-HOUR, SET QTR-HR COUNTER & CALL SETCUR

FIGURE 4. CURRENT BACKGROUND PROGRAM FLOWCHART
1) NINETY SIX (96) QUARTER-HOURS WITH CURRENT DATA RESOLVED IN MASTER DATA BASE (WITHOUT THE PLANNED OUTAGES).

2) NINETY SIX (96) QUARTER-HOURS OVERLAYED WITH PLANNING DATA—SEE RESOLUTION OF CURRENT DATA IN TABLE 4.

3) NINE (9) QUARTER HOURS (BEGINNING WITH THE CURRENT QUARTER-HOUR) ARE TREATED BY THEMSELVES.

ITEMS 1 TO 3 OCCUR;

a) START OF DAY
b) EVERY QUARTER HOUR
c) AFTER PLAN IS SUBMITTED
d) AFTER A SIGNIFICANT CHANGE IN CURRENT DATA

(PROCESS CONTINUED ON FIGURE 5B.)

FIGURE 5A. QUARTER-HOUR PROCESSING (1 of 2 Sheets)
FOR CURRENT MODE
NINE (9) QUARTER-HOURS

1 2 3 4 5 6 7 8 9

4) A "DO LOOP" EXAMINES CONFIGURATION ELIGIBILITY
FOR THE 9 QUARTER-HOURS
5) AN INELIGIBLE SELECTED CONFIGURATION IN THE
9 QUARTER-HOURS GENERATES ALERT(S) --
PROBLEM(S) SHOULD BE RESOLVED USING THE
APPROPRIATE CONFIGURATION PANEL(S)

-OR-

FOR PLANNING MODE
NINE (9) QUARTER-HOURS

1 2 3 4 5 6 7 8 9

6) A "DO LOOP" EXAMINES CONFIGURATION ELIGIBILITY
FOR THE 9 QUARTER-HOURS
7) AN INELIGIBLE SELECTED CONFIGURATION IN THE 9
QUARTER-HOURS CAUSES THE SUBMITTED PLAN(S)
TO BE REJECTED. PREVIOUSLY ACCEPTED PLANS
ARE RETAINED.

ITEMS 4 & 5
EVERY CURRENT
UPDATE

ITEMS 6 & 7
OCUR WHEN A PLAN
IS SUBMITTED

FIGURE 5B. QUARTER-HOUR PROCESSING (2 of 2 Sheets)
FIGURE 6. FOREGROUND PROGRAM FLOWCHART (1 of 2 Sheets)
SECONDARY CALLING SEQUENCE OF THE FOREGROUND PROGRAM
FOR USER AT

SELPF PLI

CHECKR PLI  PF3AT PLI  PF55 PLI  PF7S PLI  PF8AT PLI

PFZ8 PLI  PF4AT PLI  PF8AT PLI  PF8AT PLI  PF108 PLI

FIGURE 6. FOREGROUND PROGRAM FLOWCHART (2 of 2 Sheets)
<table>
<thead>
<tr>
<th>TIME ARRIVAL</th>
<th>DEPARTURES</th>
<th>TOTAL ARR DEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>0920 14R 22R</td>
<td>9L 22L 27L</td>
<td>217 67 150</td>
</tr>
</tbody>
</table>

**Planned**

(MINMA CEIL VIS/RVR)

<table>
<thead>
<tr>
<th>MINMA CEIL VIS/RVR</th>
<th>SPECIAL MEETING AT 14:30 TO DISCUSS RCM8</th>
</tr>
</thead>
<tbody>
<tr>
<td>14R 200 2400</td>
<td></td>
</tr>
<tr>
<td>22R 200</td>
<td></td>
</tr>
<tr>
<td>3/4</td>
<td></td>
</tr>
</tbody>
</table>

**Actual**

<table>
<thead>
<tr>
<th>TIME</th>
<th>TOTAL KUBBS</th>
<th>CGT</th>
<th>PLANO</th>
<th>FARRM</th>
<th>TOTAL NORTH</th>
<th>EAST</th>
<th>SOUTH</th>
<th>WEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td>25</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>20</td>
<td>25</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>1215</td>
<td>25</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>20</td>
<td>25</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

**Messages**

(...09:20:39)

- 9L CA/CD/LOC/S/8
- 14R OM/MM/IM
- 22R CA/CD/ALS
- 22L CA/S

/*PF1 MASTER AUTO /PF2 MASTER /PF3 CONFIG /PF4 MSG /PF5 DEMAND /PF6 WX */
/*PF7 RWY COND /PF8 EQUIP /PF9 TRIG /PF10 FORECAST /PF11 CLEAR */
/*HIT ENTER TO SCROLL MESSAGES ONE BY ONE */

**Figure 7. PF-1 Master Auto Panel**
***STATIC DISPLAY***

**STATIC DISPLAY**

**PF2 -- MASTER PANEL**

**CONFIG.** 1607 14R 22R
**TIME ARRIVALS** 22L 27L
**DEPARTURES** 181 68 113

**TOTAL ARR DEP**

**VFR**

**PLANNED**

**MINMA CEIL VIS/RVR**
**MINMA CEIL VIS/RVR**

**14R** 200 1800

**22R** 200 1/2

**SPECIAL MEETING AT 14:30 TO DISCUSS RCMS**

**1200 X 220 35**

**WIND CEILING**

**2705**
**SCT 5000**

**TIME**

**TOTAL KUBBS**
**CGT**
**PLANO**
**FARRM**
**TOTAL NORTH**
**EAST**
**SOUTH**
**WEST**

**0 WX-PLNS**

**1200**

**25**
**3**
**1**
**1**
**20**
**25**
**5**
**5**
**10**
**5**

**1215**

**25**
**3**
**1**
**1**
**20**
**25**
**5**
**5**
**10**
**5**

**EQP**

**SCROLL 4 LINES**

**9L CA/CD/S/B**

/PF1 MASTER AUTO/PF2 MASTER/PF3 CONFIG/PF4 MSG/PF5 DEMAND/PF6 WX/PF7 RWW COND
/PF8 EQUIP/PF9 TRIG/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT
SCREEN UPDATED BY AT 1312 GMT

**FIGURE 8. PF-2 MASTER PANEL**
PF3 -- ELIGIBLE CURRENT CONFIGURATION PANEL

CURRENT TIME SLOT
SELECT CNFG 29

SCROLL 15 LINES REASON NOISE RWY MAINT STAFFING DEMAND OTHER
CNFG ARRIVALS DEPARTURES VFR ARR DEP RUNWAY REMARKS

SEL. 14R 22R 22L 27L 68 113 4R
5 4R 9R 32R 32L 70 112 4L
6 4R 9R 4L 32R 70 58 9R
7 4R 9R 4L 32R 32L 70 114 9L CA/CD/S/B
16 9R 14L 4R 4L 70 88 14R
19 9R 14R 4R 4L 71 112 14L
23 9R 14R 14L 4R 4L 104 89 22R
25 14R 14L 4L 9R 70 89 22L
27 9R 14R 4L 22L 72 112 27R
28 9R 14R 14L 4L 22L 106 89 27L
29 14R 22R 22L 27L 68 113 32R
39 9R 14K 14L 9R 22L 106 84 32L
41 14R 14L 22L 27L 70 112 W=WIND/M=MIDWAY/D=DAY ONLY
46 14R 14L 9R 22L 70 112 EN=E-NV/EL=E-LGT/ER=E-RVR
49 14R 22R 27L 22L 27L 106 76 CA=CLOSED ARR/C=CLSED DEP
50 22R 27L 22L 27R 70 72 S=SURFACE/B=BRAKING--------
51 22R 27L 27R 27L 72 36 PLANNED WX CHANGE GMT
/PF1 MASTER AUTO/PF2 MASTER/PF3 ADVANCE/PF4 MSG/PF5 DEMAND/PF6 WX/PF7 RWY COND
/PF8 EQUIP/PF9 INELIG/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT

CNFG SELECTED BY AT 1043 GMT

FIGURE 9. PF-3 ELIGIBLE CURRENT CONFIGURATION PANEL
PF3 -- ELIGIBLE PLANNING CONFIGURATION PANEL

**PF3 -- ELIGIBLE PLANNING CONFIGURATION PANEL**

**PLAN TIME SLOT #2***

**SELECT CNFG 29***

**TIME SLOT 1630 TO 1645 GMT***

**SCROLL 15 LINES***

**REASON NOISE***

**RWY MAINT***

**STAFFING DEMAND OTHER X***

**CNFG ARRIVALS***

**DEPARTURES VFR ARR DEP***

**RUNWAY REMARKS***

**SEL. 14R 22R, 22L 27L***

**22L 27L***

**68 113 4R***

**5 4R 9R***

**32R 32L***

**70 112 4L***

**6 4R 9R***

**4L 32R 32L***

**70 114 9L CA/CD/S/B***

**7 4R 9R***

**4L 32R 32L***

**70 114 9L CA/CD/S/B***

**16 9R 14L***

**4R 4L***

**70 88 14R***

**19 9R 14R***

**4R 4L***

**71 112 14L***

**23 9R 14R 14L***

**4R 4L***

**104 89 22R***

**25 14R 14L***

**4L 9R***

**70 89 22L***

**27 9R 14R***

**4L 22L***

**72 112 27R***

**28 9R 14R 14L***

**4L 22L***

**106 89 27L***

**29 14R 22R***

**22L 27L***

**68 113 32R***

**39 9R 14R 14L***

**9R 22L***

**106 84 32L***

**41 14R 14L***

**22L 27L***

**70 112 W=WIND/M=MIDWAY/D=DAY ONLY***

**46 14R 14L***

**9R 22L***

**70 112 EN=E-NAV/EL=E-LGT/ER=E-RVR***

**49 14R 22R 27L***

**22L 27L***

**106 76 CA=CLOSED ARR/CD=CLOSED DEP***

**50 22R 27L***

**22L 27R***

**70 72 S=SURFACE/B=BREAKING-------***

**51 22R 27L***

**27R 27L***

**72 36 PLANNED WX CHANGE GMT***

/FF1 MASTER AUTO/FF2 MASTER/FF3 ADVANCE/FF4 RETURN TO ELIGIBLE CURRENT CONFIG

/FF9 INELIG/FF11 RECALL /FF12 ENTER/FA? PRINT

CNFG SELECTED BY AT 1043 GMT

**FIGURE 10. PF-3 (REPEATED) ELIGIBLE PLANNING CONFIGURATION PANEL FOR NEXT QUARTER-HOUR**
### PF9: INELIGIBLE CURRENT CONFIGURATION PANEL

Start Time: 1611 GMT
End Time: 1615 GMT

#### CURRENT TIME SLOT

**SCROLL 16 LINES**

<table>
<thead>
<tr>
<th>ARRIVALS</th>
<th>DEPARTURES</th>
<th>REASONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 4R 9R</td>
<td>4L 9L 32R</td>
<td>C</td>
</tr>
<tr>
<td>2 4R 9R</td>
<td>4L 9L 32R 32L</td>
<td>C</td>
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<td>3 4R 9L</td>
<td>4L 32R</td>
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</tr>
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<td>4 4R 9R 9L</td>
<td>4L 9L 32R</td>
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<tr>
<td>8 4R 9R</td>
<td>4L 9L 32R</td>
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<td>9 4R 9L</td>
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</tr>
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<td>10 4R 9L</td>
<td>4L 9R 32R</td>
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<tr>
<td>11 4R 9L 9L</td>
<td>32R 32L</td>
<td>C</td>
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</tr>
<tr>
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<td>4L 32L</td>
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</tr>
<tr>
<td>14 9R 9L</td>
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<td>9R 9L</td>
<td>C</td>
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<td>17 9R 14L</td>
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</tr>
<tr>
<td>22 9R 14R 14L</td>
<td>4L 9L</td>
<td>C</td>
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/PF3 CONFIG/FF9 ADVANCE/NO RECALL/NO ENTER/PA2 PRINT

---

**FIGURE 11.** PF-9 (SELECTED FROM PF-3) INELIGIBLE PLANNING CONFIGURATION PANEL
**PF9 -- INELIGIBLE PLANNING CONFIGURATION PANEL**

**TIME SLOT 1645 TO 1700 GMT**

**PLAN TIME SLOT $3**

**SCROLL 16 LINES**

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<tr>
<th>ARRIVALS</th>
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<th>REASONS</th>
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<td>4L 32R</td>
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<td>4L 9L</td>
</tr>
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</table>

/PF3 CONFIG/ PF4 RETURN TO INELIGIBLE CURRENT CONFIG/ PF9 ADVANCE/ NO RECALL

/NO ENTER/ PA2 PRINT

**FIGURE 12.** PF-9 (REPEATED FROM PF-9) INELIGIBLE PLANNING CONFIGURATION PANEL FOR NEXT QUARTER-HOUR
PF4 -- AT MESSAGE PANEL 1400 GMT

SCROLL 8 LINES RECENT ALERTS AND ADVISORIES-----------------------------TIME
CURRENT CONFIGURATION INELIGIBLE AT 1347 DUE TO CA/CD
NEW ARR MINS AT 1340 ON 4R 4L 9R 9L 14R 14L 22R 22L 27R 27L 32R 32L

SCROLL 8 LINES CURRENT EQUIPMENT AND RUNWAY MESSAGES------------------TIME
9L CA OTS FROM 1345
9L CD OTS FROM 1345

/FF1 MASTER AUTO/FF2 MASTER/FF3 CONFIG/FF4 MSG/FF5 DEMAND/FF6 WX/FF7 RWY COND
/FF8 EQUIP/FF9 TRIG/FF10 FORECAST/NO RECALL/NO ENTER/PA2 PRINT

**********************************************************************

**FIGURE 13. PF-4 USER MESSAGE PANEL**
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<th>TIME</th>
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<th>CGT</th>
<th>PLAND</th>
<th>FARM</th>
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<th>E</th>
<th>S</th>
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</table>

*PF5 -- DEMAND PANEL, 1200 GMT*

**SCREEN UPDATED BY CF 1200 GMT**

**FIGURE 14. PF-5 DEMAND PANEL.**
PF6 -- WEATHER PANEL 1554 GMT

CURRENT WEATHER

<table>
<thead>
<tr>
<th>TIME</th>
<th>SKY</th>
<th>CEILING</th>
<th>VISIBILITY</th>
<th>ATMOSPHERICS</th>
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BAR PRESSURE | TEMP | DEW | WIND | ALT SETTING | OTHER
220 | 35 | |
1200 X 220 35

FORECAST WEATHER

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<tr>
<th>TIME</th>
<th>SKY</th>
<th>CEILING</th>
<th>VISIBILITY</th>
<th>ATMOSPHERICS</th>
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<tbody>
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</table>

BAR PRESSURE | TEMP | DEW | WIND | ALT SETTING | OTHER
|     |     |     |     |            |     |

CAB VISIBILITY

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<td>5/16</td>
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</table>

/PF1 MASTER AUTO/PF2 MASTER/PF3 CONFIG/PF4 MSG/PF5 DEMAND/PF6 AREA WX/PF7 RFW
/PF8 EQUIP/PF9 TRIG/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PF2 PRINT
SCREEN UPDATED BY AT 1052 GMT

FIGURE 15. PF-6 WEATHER PANEL
FF6 -- AREA WEATHER PANEL 1554 GMT

ORD FT 021515 250 -SCT 0910. 00Z CLR. 09Z VFR..
CMI FT 021515 45 SCT 250 -SCT 0710. 00Z CLR. 09Z VFR..
DEC FT 021515 45 SCT 250 -SCT 0710. 00Z CLR. 09Z VFR..
DFA FT 021515 45 SCT 250 -SCT 0910. 00Z CLR. 09Z VFR..
MDW FT 021515 250 -SCT 0910. 00Z CLR. 09Z VFR..
MLI FT 021515 45 SCT 250 -SCT 0910. 00Z CLR. 09Z VFR..
ORD FT 021515 250 -SCT 0910. 00Z CLR. 09Z VFR..
FIA FT 021515 45 SCT 250 -SCT 0710. 00Z CLR. 09Z VFR..
RFD FT 021515 45 SCT 250 -SCT 0910. 00Z CLR. 09Z VFR..
SPI FT 021515 45 SCT 250 -SCT 0710. 00Z CLR. 09Z VFR..
UIN FT 021515 250 -SCT 0708. 17Z 50 SCT 0810.00Z 250 -SCT 0908. 09Z VF.

/FF6 LOCAL WX/FF12 ENTER/PA2 PRINT

** FIGURE 16. PF-6 (REPEATED) AREA WEATHER PANEL **
| RWY CLOSURE | PF7 -- RUNWAY CONDITIONS PANEL | 1400 GMT |
| RWY | BOTH | ARR | DEP | SURFACE | BRAKING | PAVEMENT AND SAFETY REMARKS |
| 4R |   |   |   |   |   |   |
| 4L |   |   |   |   |   |   |
| 9R |   |   |   |   |   |   |
| 9L | 0 | 0 | 0 | SNOW | POOR |   |
| 14R |   |   |   |   |   |   |
| 14L |   |   |   |   |   |   |
| 22R |   |   |   |   |   |   |
| 22L | 0 |   |   | ICE |   |   |
| 27R |   |   |   |   |   |   |
| 27L |   |   |   |   |   |   |
| 32R |   |   |   |   |   |   |
| 32L |   |   |   |   |   |   |
| ALL |   |   |   |   |   |   |

SCROLL 3 LINES:

9L CA OTS FROM 1345
9L CD OTS FROM 1345

/PF1 MASTER AUTO/PF2 MASTER/PF3 CONFIG/PF4 MSG/PF5 DEMAND/PF6 WX/PF7 RWY COND
/PFB EQUIP/PF9 TAXIWAY/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT
SCREEN UPDATED BY AT 0837 GMT

FIGURE 17. PF-7 RUNWAY CONDITIONS PANEL
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<th>COM</th>
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<td>O</td>
<td>200</td>
<td>4/0</td>
<td>2400</td>
</tr>
<tr>
<td>27L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>200</td>
<td>1800</td>
</tr>
<tr>
<td>32R</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>200</td>
<td>2400</td>
</tr>
<tr>
<td>32L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>200</td>
<td>2400</td>
</tr>
</tbody>
</table>

SCROLL 4 LINES 14R CAT II 14R CAT III 14L CAT II 14L CAT III

/ PF1 MASTER AUTO / PF2 MASTER / PF3 CONFIG / PF4 MSG / PF5 DEMAND / PF6 WX / PF7 RWY COND
/ PF8 EQUIP / PF9 TAXIWAY / PF10 FORECAST / PF11 RECALL / PF12 ENTER / FA2 PRINT

SCREEN UPDATED BY AT 0838 GMT

**Figure 18. PF-8 Equipment Panel**
**PF9 -- TRIGGER VALUES**

---

<table>
<thead>
<tr>
<th>CROSSWIND ADVISORY LEVEL</th>
<th>ARR 10</th>
<th>DEP 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAILWIND ADVISORY LEVEL</td>
<td>ARR 10</td>
<td>DEP 15</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>EQUIPMENT OTS 15</th>
<th>EQUIPMENT RTS 15</th>
<th>RUNWAY OTS 15</th>
<th>RUNWAY RTS 15</th>
<th>PLANNED CONFIGURATION CHANGE DUE TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOISE 15</td>
<td>RWY MAINT 60</td>
<td>STAFF 30</td>
<td>DEMAND 90</td>
<td>OTHER 15</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>TOTAL</th>
<th>ARR</th>
<th>DEP</th>
<th>DEMAND</th>
<th>DEMAND</th>
<th>WIND</th>
<th>CEILING</th>
<th>RVR</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td></td>
<td></td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRIGGERED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**/PF1 MASTER AUTO/PF2 MASTER/PF3 CONFIG/PF4 MSG/PF5 DEMAND/PF6 WX/PF7 RWY COND**

**/PF8 EQUIP/PF9 TRIG/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA1 END/PA2 PRINT**

SCREEN UPDATED BY AT 0837 GMT

---

**FIGURE 19. PF-9 TRIGGER VALUE PANEL**
PF10 -- PLANNING/FORECAST SELECTION PANEL

DO PLANNING MODE
DO FORECAST MODE (MON)

---------------
USE SAVED FORECAST
FILE FROM

---------
(USE AN X TO SELECT OPTIONS)

-------------
MON (STORED DATA)
TUE
WED
THU
FRI
SAT
SUN

(YOU MAY SELECT EITHER CURRENT PLANNING OR FORECAST MODE)
/PF1 MASTER AUTO/PF6 F-WX/PF7 F-RWY/PF8 F-EQUIP/PF11 END
SELECT EITHER PLANNING OR A DAY FOR FORECASTING

**Figure 20. PF-10 PLANNING/FORECAST SELECTION PANEL**
**PF6 -- WEATHER PLANNING LOG  0901 GMT**

<table>
<thead>
<tr>
<th>START</th>
<th>END</th>
<th>CEIL</th>
<th>VIS</th>
<th>WIND</th>
<th>REMARKS</th>
<th>USER ID</th>
<th>ACCEPT TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1400</td>
<td>1600</td>
<td>5000</td>
<td>1-1/2</td>
<td>3515</td>
<td>CLRING</td>
<td>AT</td>
<td>0836</td>
</tr>
<tr>
<td>1600</td>
<td>1800</td>
<td>7000</td>
<td>&gt;7</td>
<td>2705</td>
<td>CLRING</td>
<td>AT</td>
<td>0836</td>
</tr>
</tbody>
</table>

/  PF1 MASTER AUTO/ PF6 P-WX/ PF7 P-RUN/ PF8 P-EQUIP/ PF10 FORECAST/ PF11 RECALL  
/  PF12 ENTER/ PA2 PRINT  
AT CONTROLS PLAN  
AT PLAN REJECTED  0905 USE PF11 TO RECALL REJ. PLAN

---

**FIGURE 21. WEATHER PLANNING LOG (PF-6)**
**PF7 - RUNWAY CLOSURE PLANNING LOG**

<table>
<thead>
<tr>
<th>Rwy</th>
<th>BOTH</th>
<th>ARR</th>
<th>DEP</th>
<th>CLOSED</th>
<th>OPEN</th>
<th>SURFACE</th>
<th>BRAKING</th>
<th>REMARKS</th>
<th>ID</th>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>14R</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>1400</td>
<td>1430</td>
<td>SNOW</td>
<td></td>
<td></td>
<td>AT</td>
<td></td>
</tr>
<tr>
<td>27R</td>
<td>P</td>
<td></td>
<td></td>
<td>1530</td>
<td>1600</td>
<td></td>
<td></td>
<td></td>
<td>AT</td>
<td></td>
</tr>
<tr>
<td>27L</td>
<td>P</td>
<td></td>
<td></td>
<td>1515</td>
<td>1530</td>
<td></td>
<td></td>
<td>REPAIRS</td>
<td>AT</td>
<td></td>
</tr>
</tbody>
</table>

/ PF1 MASTER AUTO / PF6 P-WX / PF7 P-RUN / PF8 P-EQUIP / PF10 FORECAST / PF11 RECALL
/ PF12 ENTER / PA2 PRINT

INPUT NOT ACCEPTED, INPUT MUST BE A "P" OR A BLANK

**FIGURE 22. RUNWAY CLOSURE PLANNING LOG (PF-7)**
<table>
<thead>
<tr>
<th>RWY</th>
<th>EQUIPMENT</th>
<th>OTS</th>
<th>RTS</th>
<th>REMARKS</th>
<th>USER ID</th>
<th>ACCEPT TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>9L</td>
<td>LOC</td>
<td>0700</td>
<td>2300</td>
<td>MAINT.</td>
<td>AT 0836</td>
<td>AT 0836</td>
</tr>
<tr>
<td>22R</td>
<td>OM</td>
<td>1430</td>
<td>1500</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

/PF1 MASTER AUTO/PF6 P-WX/PF7 P-RUN/PF8 P-EQUIP/PF10 FORECAST/PF11 RECALL
/PF12 ENTER/PA2 PRINT
AVAILABLE FOR INPUT AT REVIEWED PLAN 0837

FIGURE 23. EQUIPMENT PLANNING LOG (PP-8)
**PF10 ---- FORECAST CONTROL PANEL**

<table>
<thead>
<tr>
<th>DO FORECAST MODE ( MON )</th>
<th>FORECAST CO-PARTICIPANTS</th>
<th>EXIT CHOICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>-------------------------</td>
<td>--------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>USE SAVED FORECAST X TUE</td>
<td>AT X CITY</td>
<td>SUBMIT CONFIG</td>
</tr>
<tr>
<td>FILE FROM</td>
<td>CAB X CF2</td>
<td>SUBMIT PLANS</td>
</tr>
<tr>
<td></td>
<td>AF</td>
<td>SUBMIT WX PLAN</td>
</tr>
<tr>
<td></td>
<td>THU</td>
<td>SUBMIT RWY PLAN</td>
</tr>
<tr>
<td>(USE AN X TO SELECT</td>
<td>FRI</td>
<td>SUBMIT EQUIP PLAN</td>
</tr>
<tr>
<td>OPTIONS)</td>
<td>SAT</td>
<td>FORCE SELECTIONS</td>
</tr>
<tr>
<td></td>
<td>REMOTE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SUN</td>
<td></td>
</tr>
<tr>
<td><strong>SCROLL 6 LINES</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONFIG SUMMARY -- SELECT START TIME 0900**

<table>
<thead>
<tr>
<th>START</th>
<th>ELIG</th>
<th>TIME</th>
<th>STATUS</th>
<th>ARRIVALS</th>
<th>DEPARTURES</th>
<th>HOURS CAP</th>
<th>PEAK DMD/CAP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0900</td>
<td>14R 22R</td>
<td>9L 22L 27L</td>
<td>217 67 150</td>
<td>162 104 58</td>
<td></td>
</tr>
<tr>
<td>1030</td>
<td></td>
<td>14R 22R</td>
<td>22L 27L</td>
<td>181 68 113</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200</td>
<td></td>
<td>4R 9R 9L</td>
<td>32R 32L</td>
<td>162 104 58</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*PF1 MASTER AUTO/PF2 STATUS/PF3 CNFG/PF4 WHAT IF/PF5 DEMAND/PF6 P-WX/PF7 P-RWY*
*PF8 P-EQUIP/PF10 NEW PARTNER/PF11 END/PF12 ENTER/PA2 PRINT*

**FIGURE 24. PF-10 FORECAST CONTROL PANEL**
**PF2 -- FORECAST STATUS PANEL**

<table>
<thead>
<tr>
<th>Rwy</th>
<th>Loc/Gr</th>
<th>Com/OM</th>
<th>MM</th>
<th>IM</th>
<th>ALS</th>
<th>F</th>
<th>DME</th>
<th>RVR</th>
<th>HIR</th>
<th>CL</th>
<th>TDZ</th>
<th>CA/D</th>
<th>S/B</th>
<th>CEIL</th>
<th>VISIB</th>
</tr>
</thead>
<tbody>
<tr>
<td>4R</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>D</td>
<td>0</td>
<td>D</td>
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<tr>
<td>4L</td>
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<td>9R</td>
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</tr>
<tr>
<td>9L</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>D</td>
<td>0</td>
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</tr>
<tr>
<td>22L</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
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</tr>
<tr>
<td>14R</td>
<td>CAT II</td>
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<td></td>
<td></td>
<td></td>
<td>UPS1</td>
<td></td>
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<tr>
<td>14R</td>
<td>CAT III</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>UPS2</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>14L</td>
<td>CAT II</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>UPS3</td>
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</tr>
<tr>
<td>14L</td>
<td>CAT III</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>ENG1</td>
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<td></td>
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<tr>
<td></td>
<td>VOR</td>
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<td></td>
<td></td>
<td></td>
<td>ENG2</td>
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<td></td>
</tr>
<tr>
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<td>MIDFIELD DME</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>ENG3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WEATHER**

CEIL VISIB

>4500 >7

**/PF1 MASTER AUTO/PF2 STATUS/PF3 CNFG/PF4 WHAT IF/PF5 DEMAND/PF6 P-WX/PF7 P-RWY**

**/PF8 P-EQUIP/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT**

**SCREEN UPDATED BY AT 0836 GMT**

**FIGURE 25. FORECAST STATUS PANEL (PF-2)**
### FORECAST PF3 -- CURRENT CONFIGURATION PANEL

<table>
<thead>
<tr>
<th>CURRENT TIME SLOT</th>
<th>SELECT CNFG 30</th>
<th>TIME SLOT 0900 TO 0915 GMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCROLL 15 LINES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNFG ARRIVALS</td>
<td>DEPARTURES</td>
<td>ARR DEP RUNWAY REMARKS</td>
</tr>
<tr>
<td>SEL. 14R 22R</td>
<td>9L 22L 27L</td>
<td>67 150 4R</td>
</tr>
<tr>
<td>1 * 4R 9R</td>
<td>4L 9L 32R</td>
<td>68 105 4L</td>
</tr>
<tr>
<td>2 * 4R 9R</td>
<td>4L 9L 32R 32L</td>
<td>67 159 9R</td>
</tr>
<tr>
<td>3 * 4R 9R 9L</td>
<td>4L 32R</td>
<td>100 54 9L CA/CD/S/B</td>
</tr>
<tr>
<td>4 * 4R 9R 9L</td>
<td>4L 9L 32R</td>
<td>101 70 14R</td>
</tr>
<tr>
<td>5 * 4R 9R</td>
<td>32R 32L</td>
<td>70 112 14L</td>
</tr>
<tr>
<td>6 * 4R 9R</td>
<td>4L 32R</td>
<td>70 58 22R</td>
</tr>
<tr>
<td>7 * 4R 9R</td>
<td>4L 32R 32L</td>
<td>70 114 22L</td>
</tr>
<tr>
<td>8 * 4R 9R</td>
<td>4L 9L</td>
<td>70 103 27R</td>
</tr>
<tr>
<td>9 * 4R 9L</td>
<td>4L 9R</td>
<td>68 112 27L</td>
</tr>
<tr>
<td>10 * 4R 9L</td>
<td>4L 9R 32R</td>
<td>68 111 32R</td>
</tr>
<tr>
<td>11 * 4R 9R 9L</td>
<td>32R 32L</td>
<td>104 58 32L</td>
</tr>
<tr>
<td>12 * 4R 9R 9L</td>
<td>4L 9R</td>
<td>104 80 W=WND/M=MIDWAY/D=DAY ONLY</td>
</tr>
<tr>
<td>13 * 4R 9R 9L</td>
<td>4L 32L</td>
<td>104 96 EN=E-NAV/EL=E-LGT/ER=E-RVR</td>
</tr>
<tr>
<td>14 * 9R 9L</td>
<td>32R 32L</td>
<td>70 58 CA=CLOSED ARR/CD=CLOSED DEF</td>
</tr>
<tr>
<td>15 9R 14L</td>
<td>9L 9R</td>
<td>72 84 S=SURFACE/R=BRACING-----</td>
</tr>
<tr>
<td>16 * 9R 14L</td>
<td>4L 4L</td>
<td>70 88 PLANNED WX CHANGE GMT</td>
</tr>
</tbody>
</table>

**PF1 MASTER AUTO/PF2 STATUS/PF3 ADVANCE/PF4 WHAT IF/PF5 DEMAND/PF6 P-WX/PF7 P-R**

**PF8 P-EQUIP/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT**

**CNFG SELECTED BY AT 0836 GMT**

---

**FIGURE 26. FORECAST CONFIGURATION PANEL PF-3**
**FORECAST PF5 -- DEMAND PANEL**

<table>
<thead>
<tr>
<th>TIME</th>
<th>ARRIVALS</th>
<th>X/Y/Z</th>
<th>TOTAL Y=HEAVY</th>
<th>Z=LIGHT</th>
<th>DEPARTURES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TIME</td>
<td>TOTAL</td>
<td>KUBS</td>
<td>CGT</td>
<td>PLAND</td>
</tr>
<tr>
<td>1200</td>
<td>25</td>
<td>3/1/1</td>
<td>1/1</td>
<td>1</td>
<td>20/10/10</td>
</tr>
<tr>
<td>1215</td>
<td>25</td>
<td>3/1/1</td>
<td>1/1</td>
<td>1</td>
<td>20/10/10</td>
</tr>
<tr>
<td>1230</td>
<td>25</td>
<td>3/1/1</td>
<td>1/1</td>
<td>1</td>
<td>20/10/10</td>
</tr>
<tr>
<td>1245</td>
<td>25</td>
<td>3/1/1</td>
<td>1/1</td>
<td>1</td>
<td>20/10/10</td>
</tr>
</tbody>
</table>

**1200 1300 100 12/4/4 4/4 4 80/40/40 100 20 20 40 20**

**1300 1315 25 3/1/1 1/1 1 20/10/10 25 5 5 10 5**

**1330 1345 25 3/1/1 1/1 1 20/10/10 25 5 5 10 5**

**1300 1400 100 12/4/4 4/4 4 80/40/40 100 20 20 40 20**

**1400 1500 1600 1700 100 12/4/4 4/4 4 80/40/40 100 20 20 40 20**

/FF1 MASTER AUTO/FF2 STATUS/FF3 CNFG/FF4 WHAT IF/FF5 DEMAND/FF6 F-WX/FF7 F-RWY
/FF8 P-EQUIP/FF10 FORECAST/NO RECALL/NO ENTER/PA2 PRINT
SCREEN UPDATED BY CF 1200 GMT

**FIGURE 27. FORECAST DEMAND PANEL (PF-5)**
**Figure 28: Forecast Weather Planning Log (PF-6)**

<table>
<thead>
<tr>
<th>USER ID</th>
<th>TIME</th>
<th>CLSL</th>
<th>1430</th>
<th>1600</th>
<th>3000</th>
<th>0910</th>
<th>2-3/4</th>
<th>0910</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCEPT</td>
<td>1004</td>
<td>Slight Air Turbulence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FORECAST**

- PF6: 1003 GMT
- WEATHER PLANNING LOG
- USER ID
- TIME
- CLSL
- Remarks
- Slight Air Turbulence
- 1430
- 1600
- 3000
- 0910
- 2-3/4
- 0910

**Start:**

- AT CONTROLS PLAN
- AT PLAN ACCEPTED 1004

**End:**

- 1004
<table>
<thead>
<tr>
<th>FORECAST</th>
<th>FF7 - RUNWAY CLOSURE PLANNING LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 GMT</td>
<td>MAINT.</td>
</tr>
<tr>
<td>USER ID</td>
<td>AT</td>
</tr>
<tr>
<td>ACCEPT TIME</td>
<td>1006</td>
</tr>
<tr>
<td>Rwy 22L</td>
<td>P</td>
</tr>
<tr>
<td>Both Apr Dep</td>
<td>P</td>
</tr>
<tr>
<td>Closed Surface</td>
<td>1930</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
<tr>
<td>/FF1 Master Auto</td>
<td></td>
</tr>
<tr>
<td>/FF2 Status/F3</td>
<td></td>
</tr>
<tr>
<td>Cnfg/F4</td>
<td></td>
</tr>
<tr>
<td>FF1 Recall/F12</td>
<td></td>
</tr>
<tr>
<td>FF8 Fqnt/F9</td>
<td></td>
</tr>
<tr>
<td>Fqnt/F10</td>
<td></td>
</tr>
<tr>
<td>Controls Plan</td>
<td></td>
</tr>
<tr>
<td>Plan Accepted</td>
<td></td>
</tr>
</tbody>
</table>

*FIGURE 29. FORECAST RUNWAY CLOSURE PLANNING LOG (PF-7)*
<table>
<thead>
<tr>
<th>Rwy</th>
<th>Equipment</th>
<th>OTS</th>
<th>RTS</th>
<th>Remarks</th>
<th>User ID</th>
<th>Accept Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>9L</td>
<td>LOC</td>
<td>0700</td>
<td>2300</td>
<td>REPAIRS</td>
<td>AT</td>
<td>AT 1008</td>
</tr>
<tr>
<td>32L</td>
<td>OM</td>
<td>1400</td>
<td>1900</td>
<td></td>
<td>AT</td>
<td>AT 1008</td>
</tr>
</tbody>
</table>

/PF1 MASTER AUTO/PF2 STATUS/PF3 CNFG/PF4 WHAT IF/PF5 DEMAND/PF6 P-WX/PF7 P-RUN
/PF8 P-EQUIP/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT
AT CONTROLS PLAN AT PLAN ACCEPTED 1008

**Figure 30.** Forecast Equipment Planning Log (PF-8)
### Equipment Status and Readings

<table>
<thead>
<tr>
<th>RW</th>
<th>LOC</th>
<th>GS</th>
<th>LOM</th>
<th>OH</th>
<th>IM</th>
<th>IM</th>
<th>ALS</th>
<th>F</th>
<th>DME</th>
<th>RVR-TH/D/H/D</th>
<th>RVR</th>
<th>HIRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>4F</td>
<td>11100110</td>
<td>11100111</td>
<td>-</td>
<td>*</td>
<td>*</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4L</td>
<td>11100110</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>*</td>
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<td>-</td>
<td>-</td>
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<tr>
<td>9R</td>
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<td>11100111</td>
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<td>*</td>
<td>*</td>
<td>-</td>
<td>1</td>
<td>*</td>
<td>i</td>
<td>2400</td>
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<td>1</td>
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<tr>
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<td>*</td>
<td>*</td>
<td>-</td>
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<td>1</td>
<td>1</td>
<td>2400</td>
<td>1</td>
<td>1</td>
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<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>1</td>
<td>i</td>
<td>1</td>
<td>2400</td>
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<td>1</td>
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<tr>
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<td>11100111</td>
<td>i</td>
<td>i</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>i</td>
<td>*</td>
<td>2400</td>
<td>1</td>
<td>1</td>
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<tr>
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<td>11100111</td>
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<td>*</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>1H</td>
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<td>11100111</td>
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<td>*</td>
<td>-</td>
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<td>i</td>
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<td>*</td>
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<td>-</td>
<td>-</td>
<td>i</td>
<td>2400</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
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<td>-</td>
<td>*</td>
<td>i</td>
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<td>*</td>
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<td>11100111</td>
<td>-</td>
<td>*</td>
<td>-</td>
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<td>i</td>
<td>i</td>
<td>1</td>
<td>2400</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

### Figure 31. Equipment Status and Reading Panel
**SCROLL 9 LINES**
**TAXIWAY**
**PF9 -- TAXIWAY/NOTAM PANEL**
**SURFACE**
**BRAKING**
**PAVEMENT AND SAFETY REMARKS**

| 18-36 | | |
| TWYS | | |
| RPMs | | |
| ALPHA | ICE | POOR | UNSAFE CONDITIONS |
| INDIA | | | |

**SCROLL 6 LINES**
**NOTAMS**
**UFN AIRPORT CLOSED UNTIL DECEMBER 25, 1978**

/PF8 EQUIP/NO RECALL/PF12 ENTER/PA2 PRINT
SCREEN UPDATED BY USER AT AT 0846

**FIGURE 32. TAXIWAY/NOTAM PANEL.**
FILE RCMSLIB MAKLIB B2
VM/SP CONVERSATIONAL MONITOR SYSTEM

4 CEIL BIN FLOAT (21), RWY00180
4 VIS BIN FLOAT (21), RWY00190
3 IM2. /* INNER MARKER 2 OTS */ RWY00200
4 CEIL BIN FLOAT (21), RWY00210
4 VIS BIN FLOAT (21), RWY00220
4 VIS BIN FLOAT (21), RWY00230
2 CATI. /* CAT I */ RWY00240
3 NONE. /* NONE OTS */ RWY00250
4 CEIL BIN FLOAT (21), RWY00260
4 VIS BIN FLOAT (21), RWY00270
3 GS. /* GLIDE SLOPE OTS */ RWY00280
4 CEIL BIN FLOAT (21), RWY00290
4 VIS BIN FLOAT (21), RWY00300
3 TDZL. /* TOUCHDOWN ZONE LIGHTS OTS */ RWY00310
4 CEIL BIN FLOAT (21), RWY00320
4 VIS BIN FLOAT (21), RWY00330
3 RCLS. /* RWY CENTERLINE LIGHTS OTS */ RWY00340
4 CEIL BIN FLOAT (21), RWY00350
4 VIS BIN FLOAT (21), RWY00360
3 ALS. /* ALS OTS */ RWY00370
4 CEIL BIN FLOAT (21), RWY00380
4 VIS BIN FLOAT (21), RWY00390
3 FLASHER. /* FLASHERS OTS */ RWY00400
4 CEIL BIN FLOAT (21), RWY00410
4 VIS BIN FLOAT (21), RWY00420
3 OM. /* OUTER MARKER OTS */ RWY00430
4 CEIL BIN FLOAT (21), RWY00440
4 VIS BIN FLOAT (21), RWY00450
3 MM. /* MIDDLE MARKER OTS */ RWY00460
4 CEIL BIN FLOAT (21), RWY00470
4 VIS BIN FLOAT (21), RWY00480
3 RVRTD. /* RVY TOUCHDOWN OTS */ RWY00490
4 CEIL BIN FLOAT (21), RWY00500
4 VIS BIN FLOAT (21), RWY00510
4 VIS BIN FLOAT (21), RWY00520
2 LOC. /* LOCALIZER */ RWY00530
3 NONE. /* NONE OTS */ RWY00540
4 CEIL BIN FLOAT (21), RWY00550
4 VIS BIN FLOAT (21), RWY00560
3 ALS. /* LOCALIZER & ALS OTS */ RWY00570
4 CEIL BIN FLOAT (21), RWY00580
4 VIS BIN FLOAT (21), RWY00590
4 VIS BIN FLOAT (21), RWY00600
2 VOR. /* VOR */ RWY00610
3 NONE. /* VOR & ALS OTS */ RWY00620
4 CEIL BIN FLOAT (21), RWY00630
4 VIS BIN FLOAT (21), RWY00640
3 ALS. /* VOR & ALS OTS */ RWY00650
4 CEIL BIN FLOAT (21), RWY00660
4 VIS BIN FLOAT (21), RWY00670
3 FLASHER. /* VOR & FLASHER OTS */ RWY00680
4 CEIL BIN FLOAT (21), RWY00690
4 VIS BIN FLOAT (21), RWY00700
4 VIS BIN FLOAT (21), RWY00710
2 NDB. /* NON-DIRECTIONAL BEACON */ RWY00720

A-2
FILE: RCM1LIB MACLIB B2       VM/SP CONVERSATIONAL MONITOR SYSTEM

3 NONE.                  /# NONE OTS */RWY00730
4 CEIL       BIN FLOAT (21), RMY08740
4 VIS        BIN FLOAT (21), RMY00750
3 RAIL       BIN FLOAT (21), /# RAIL OTS */RWY00760
4 CEIL       BIN FLOAT (21), RMY00770
4 VIS        BIN FLOAT (21), RMY00780
3 ALS        BIN FLOAT (21), /# ALS OTS */RWY00790
4 CEIL       BIN FLOAT (21), RMY00800
4 VIS        BIN FLOAT (21), RMY00810
3 RAD DME     BIN FLOAT (21), /# RADAR DME OTS */RWY00820
4 CEIL       BIN FLOAT (21), RMY00830
4 VIS        BIN FLOAT (21), RMY00840

/ / MOD00280
/ BLANK=NO PLAN, 'TEST'=PLAN IN TEST, 'PLAN'=PREVIOUSLY ACCEPTED PLN#*/MOD00290
/ OR PLAN FORCED BY USER /

DCL 1 PSTATUS STATIC EXTERNAL. /#7-16-86*/MOD00300
2 ANYPLAN CHAR(4), MOD00310
2 WLOG      CHAR(4), MOD00320
2 WLLOG     CHAR(4), MOD00330
2 EQPLOG    CHAR(4), MOD00340

DCL 1 PLAN (96) STATIC EXTERNAL. /#PLANNED FLAGS -- 8-01-86*/PLAN0020
2 WX.                  PLAO0030
3 DIR       BIN FLOAT(21), PLAO0040
3 SPD       BIN FLOAT(21), PLAO0050
3 CEIL      BIN FLOAT(21), PLAO0060
3 VIS       BIN FLOAT(21), PLAO0070
2 RUNWAY(12), PLAO0080
3 TWRCLOSE. PLAO0090
 4 ARR       CHAR(1), PLAO0100
 4 DEP       CHAR(1), PLAO0110
 3 SURF      CHAR(5), PLAO0120
 3 BRAK      CHAR(5), PLAO0130
 3 LOC       CHAR(1), PLAO0140
 3 GS        CHAR(1), PLAO0150
 3 COM       CHAR(1), PLAO0160
 3 OM        CHAR(1), PLAO0170
 3 MM        CHAR(1), PLAO0180
 3 IM        CHAR(1), PLAO0190
 3 ALS       CHAR(1), PLAO0200
 3 FLASHER   CHAR(1), PLAO0210
 3 DME       CHAR(1), PLAO0220
 3 RVR       CHAR(1), /* TOUCHDOWN RVR */PLAO0230
 3 RVRMID    CHAR(1), /*INDIVIDUAL RVR -- MID POINT */PLAO0240
 3 RVRROLL   CHAR(1), /*INDIVIDUAL RVR -- ROLL OUT */PLAO0250
 3 WRL       CHAR(1), PLAO0260
 3 CL        CHAR(1), PLAO0270
 3 TDZ       CHAR(1), PLAO0280

DCL 1 APTSTAT(96) STATIC EXTERNAL, /*AIRPORT STATUS -- 7-09-86*/APT00020
2 ACTUAL.         APT00030

A-3
FILE RCMSLIB MACLIB B2

VM/SP CONVERSATIONAL MONITOR SYSTEM

3 DIR  BIN FLOAT(21),        APT00040
3 SPD  BIN FLOAT(21),        APT00050
3 CEIL BIN FLOAT(21),        APT00060
3 VIS  BIN FLOAT(21),        APT00070
2 RUNWAY(12),  APT00080
3 TWRCLOS,    APT00090
  4 ARR  CHAR(1),             APT00190
  4 DEP  CHAR(1),             APT00100
3 SURF  CHAR(5),             APT00120
3 BRAK  CHAR(5),             APT00130

DCL 1 PEQUIP(96) STATIC,EXTERNAL, /*EQUIPMENT STATUS -- 7-03-86*/
  2 RUNWAY(12),  MA50050
  3 CATII CHAR(1),  /*Y=IN SER,N=NOT AVAIL, "AVAILABLE"*/
  3 CATIII CHAR(1),  /*Y=IN SER,N=NOT AVAIL, "AVAILABLE"*/
  3 LOC  CHAR(1),      MA500550
  3 GS   CHAR(1),      MA500560
  3 COM  CHAR(1),      MA500570
  3 OM  CHAR(1),       MA500580
  3 MM  CHAR(1),       MA500590
  1 IM  CHAR(1),       MA500600
  3 ALS  CHAR(1),      MA500610
  3 FLASHER CHAR(1),   MA500620
  3 DME  CHAR(1),      MA500630
  3 RVR  CHAR(1),      MA500640
  3 RVRMID CHAR(1),    /*INDIVIDUAL RVR -- MID POINT*/
  3 RVRROLL CHAR(1),   /*INDIVIDUAL RVR -- ROLL OUT*/
  3 HIRL CHAR(1),      MA500650
  3 CL  CHAR(1),       MA500660
  3 TDZ  CHAR(1),      MA500670
  3 CONVERT,          MA500680
  4 CEILMIN BIN FLOAT(21), MA500690
  4 VISMIN BIN FLOAT(21), MA500700
2 VOR   CHAR(1),       MA500710
2 MID_DME CHAR(1),     MA500720
2 UPS(3) CHAR(1),      MA500730
2 ENG(3) CHAR(1),      MA500740

DCL 1 STATUS CONNECTED,/*AIRPORT STATUS -- LIKE APTSTAT -- 7-09-86*/
  2 ACTUAL,          STA06020
  3 DIR  BIN FLOAT(21),          STA06040
  3 SPD  BIN FLOAT(21),          STA06050
  3 CEIL BIN FLOAT(21),          STA06060
  3 VIS  BIN FLOAT(21),          STA06070
2 RUNWAY(12),  STA06080
  3 TWRCLOS,
    4 ARR  CHAR(1),             STA06090
    4 DEP  CHAR(1),             STA06100
    3 SURF  CHAR(5),           STA06120
    3 BRAK  CHAR(5),           STA06130

DCL 1 EQUIP CONNECTED, /*EQUIPMENT STATUS -- LIKE PEQUIP-- 7-03-86*/

A-4
FILE RCMSLIB MACLID B2
VM/SP CONVERSATIONAL MONITOR SYSTEM

2  RUNWAY(12),
3  CATII  CHAR(1),  */y=IN SER,N=NOT AVAIL. ' -AVAILABLE*/EQU96030
3  CATIII CHAR(1),  */y=IN SER,N=NOT AVAIL, ' -AVAILABLE*/EQU96030
3  LOC  CHAR(1),
3  GS  CHAR(1),
3  COM  CHAR(1),
3  OM  CHAR(1),
3  HM  CHAR(1),
3  IM  CHAR(1),
3  ALS  CHAR(1),
3  FLASHER CHAR(1),
3  DME  CHAR(1),
3  RVR  CHAR(1),  /* TOUCHDOWN RVR */EQU960150
3  RVRMID CHAR(1),  /*INDIVIDUAL RVR -- MID POINT */EQU960160
3  RVRROLL CHAR(1),  /*INDIVIDUAL RVR -- ROLL OUT */EQU960170
3  HLRL  CHAR(1),
3  CL  CHAR(1),
3  EQU960190
3  RVR  CHAR(1),
3  EQU960200
3  CONVERT,
4  CEILMIN  BIN FLOAT(21),
4  VISMIN  BIN FLOAT(21),
2  VOR  CHAR(1),
2  MID_DME CHAR(1),
2  UPS(3) CHAR(1),
2  ENG(3) CHAR(1),

/ / DCL 1 CNFG CONNECTED, /*CONFIG INFO -- LIKE CONFIG(PF3) -- 7-14-B6*/MA502020
2  ACCTIME  CHAR(4),  /*#ACCEPT TIME OF CONFIG CHANGE */MA502030
2  CONFIND  FIXED BIN(15), /*CONFIG NUM FOR QTR HR*/MA502040
2  FORCE  CHAR(1),  /*FORCED CONFIG CHANGE y=YES,N=NO*/MA502050
2  REASON,  /*' '=NO AND 'y'='YES*/MA502060
2  NOISE  CHAR(1),
2  REMAINT CHAR(1),
2  STAFF  CHAR(1),
2  DEHAND  CHAR(1),
2  OTHER  CHAR(1),
2  MID_1SR CHAR(1),  /*MIDWAY FLAG -- 5-20-85*/MA502130

/ / DCL 1 ELIGIB CONNECTED,/*ELIGIB INFO--LIKE ELTABLE(PF3) -- 7-14-B6*/MA502140
2  PW_TIME  CHAR(4),  /*' '=NO CHANGE, ELSE USE TIME*/MA502150
2  ELIG,  /*NO CHANGE*/MA502160
2  CNT  FIXED BIN(15),
2  ID  BIT(80),
2  NOTELIG,
2  WX  BIT(80),
2  RMYCLOS BIT(80),
2  SRFBRK BIT(80),
2  WINDCND BIT(80),
2  RdWYRMK(12) CHAR(26),

/ / DCL 1 Hpanel Static External, /*PF2 -- MASTER PANEL -- 7-03-B6*/MA502120
2  NOTEPAD(3) CHAR(30), /*FOR USER GENERATED NOTES */MA502130

START OF 
MASTER DATA 
BASE 

A-5
2 ACTWX, /*ACTUAL WEATHER -- FOR TRIGGERS*/
3 DIR CHAR(3), /*VIA LLWAS*/
3 SPD CHAR(2), /*VIA LLWAS*/
3 CEIL CHAR(8), /*VIA CEILOMETER -- AAANNNNN*/
2 RNYMSG(12) CHAR(79), /*COMPOSITE RNY MSG*/
2 MSG CHAR(79), /*MIDWAY FLAG -- 5-20-85*/

DCL 1 CONFIG(96) STATIC EXTERNAL, /*PF3 -- CONFIG INFO -- 7-03-86*/
2 ACCTIME CHAR(4), /*ACCEPT TIME OF CONFIG CHANGE */
2 CONFIND FIXED BIN(15), /*CONFIG NUM FOR QTR HR*/
2 FORCE CHAR(1), /*FORCED CONFIG CHANGE Y=YES, N=NO*/
2 REASON CHAR(1), /*'-'=NO AND '*'=YES*/
3 NOISE CHAR(1),
3 RMAINT CHAR(1),
3 STAFF CHAR(1),
3 DEMAND CHAR(1),
3 OTHER CHAR(1),
2 MID_13R CHAR(1), /*MIDWAY FLAG -- 5-20-85*/

DCL 1 ELTABLE(9) STATIC EXTERNAL, /*PF3 -- ELIGIB INFO -- 7-03-86*/
2 PW_TIME CHAR(4), /*NO CHANGE, ELSE USE TIME*/
2 ELIG, FIXED BIN(15),
3 ID BIT(80),
3 NOTELIG, BIT(80),
3 WX BIT(80),
3 RNYCLOS BIT(80),
3 SRFBRAK BIT(80),
2 WINDCND BIT(80),
2 RNYRMK(12) CHAR(26);

DCL 1 MESSAGE STATIC EXTERNAL, /*PF4 -- MESSAGE PANEL -- 5-18-85*/
2 ATADV, BIN FLOAT(21),
3 TABLE(20) CHAR(79),
2 CABADV, BIN FLOAT(21),
3 TABLE(20) CHAR(79),
2 CURRENT, BIN FLOAT(21),
3 TABLE(20) CHAR(79),
3 TABLE(60) CHAR(79),
2 MSG CHAR(79);

DCL 1 DEMAND STATIC EXTERNAL, /*PF5 -- DEMAND PANEL -- 7-03-86*/
2 TABLE(14),

A-6
FILE RCMSLIB MACLIB B2

VM/SP CONVERSATIONAL MONITOR SYSTEM

3 TIME,
4 START CHAR(4),
4 END CHAR(4),
3 ARR,
4 TOTAL CHAR(3),
4 KUBBS(3) CHAR(2),
4 CGT(3) CHAR(2),
4 PLANG(3) CHAR(2),
4 FARMK(3) CHAR(2),
3 DEP,
4 TOTAL CHAR(3),
4 NORTH CHAR(2),
4 EAST CHAR(2),
4 SOUTH CHAR(2),
4 WEST CHAR(2),
2 MSG CHAR(79),

DCL 1 WEATHER STATIC EXTERNAL, /*PF6 -- WEATHER PANEL -- 7-03-86*/
2 CURRENT,
3 TIME CHAR(4),
3 SKY CHAR(2),
3 CEIL(3) CHAR(8),
3 VIS CHAR(10),
3 ATMOS CHAR(12),
3 BAROM CHAR(3),
3 TEMP CHAR(3),
3 DEW CHAR(3),
3 WIND, /*SCREEN PGM CONVERTS DIR TO 2 CHAR*/
4 DIR CHAR(3),
4 SPD CHAR(2),
3 ALTIM CHAR(4),
3 OTHER CHAR(12),
2 CWX CHAR(79),
2 FRCST, /*LIKE WEATHER.CURRENT*/
3 TIME CHAR(4),
3 SKY CHAR(2),
3 CEIL(3) CHAR(8),
3 VIS CHAR(10),
3 ATMOS CHAR(12),
3 BAROM CHAR(3),
3 TEMP CHAR(3),
3 DEW CHAR(3),
3 WIND, /*SCREEN PGM CONVERTS DIR TO 2 CHAR*/
4 DIR CHAR(3),
4 SPD CHAR(2),
3 ALTIM CHAR(4),
3 OTHER CHAR(12),
2 FMX CHAR(60),
2 CAB, /*IN MILES*/
3 VIS CHAR(6),
3 CEIL CHAR(5), /*PLANNED WX CHANGE*/
2 PM_CHANGE(3),
3 TIME CHAR(4), /*CEIL VIS WIND*/
3 NAME CHAR(4),

A-7
FILE RCMSLIB MACLIB B2 VM/SP CONVERSATIONAL MONITOR SYSTEM

3 VALUE CHAR(6), /*NOTE -- WIND SPD/DIR = 4 CHAR*/MA502360
2 MSG CHAR(79), MA502370

DCL 1 ADDWX STATIC EXTERNAL, /*PF6 -- ADDED WX PANEL -- 7-03-86*/MA502390
2 RMY(12), MA502460
3 RVR(3) CHAR(4), MA502410
2 DAS_ORD CHAR(4), MA502420
2 DAS_MID CHAR(4), MA502479
2 MSG CHAR(79), MA502440

DCL 1 SURF STATIC EXTERNAL, /*PF7 -- RMY COND PANEL -- 7-03-86*/MA502450
2 RUNWAY(13), /*RUNWAY(13) = ALL*/MA502460
3 ARR CHAR(1), MA502480
3 DEP CHAR(1), MA502490
3 SURF CHAR(5), MA502500
3 BRAK CHAR(5), MA502510
3 REMARKS CHAR(40), MA502520
2 SURFMSG(36) CHAR(79), MA502530
2 MSG CHAR(79), MA502540

DCL 1 TAXIWAY STATIC EXTERNAL, /*PF7B -- TAXIWAY PANEL -- 7-03-86*/MA502550
2 ZONE(37), MA502560
3 TMY CHAR(26), MA502590
3 SURF CHAR(5), MA502590
3 BRAK CHAR(5), MA502600
3 REMARKS CHAR(36), MA502610
2 NOTAM(25) CHAR(49), MA502620
2 MSG CHAR(79), MA502630

DCL 1 RWYEQP STATIC EXTERNAL, /*PF8 -- EQUIP PANEL -- 7-03-86*/MA502640
2 RUNWAY(12), MA502660
3 CATII CHAR(1), /*NY-IN SER,N=NOT AVAIL, N=AVAILABLE*/MA502670
3 CATIII CHAR(1), /*NY-IN SER,N=NOT AVAIL, N=AVAILABLE*/MA502680
3 LOC CHAR(1), MA502690
3 LS CHAR(1), MA502700
3 COM CHAR(1), MA502710
3 OM CHAR(1), MA502720
3 HM CHAR(1), MA502730
3 IM CHAR(1), MA502740
3 ALS CHAR(1), MA502750
3 FLASHER CHAR(1), MA502760
3 DNE CHAR(1), MA502770
3 DME CHAR(1), MA502780
3 RVR CHAR(1), /*TOUCHDOWN RVR*/MA502790
3 RVRMD CHAR(1), /*INDIVIDUAL RVR -- MID POINT*/MA502790
3 RVRROLL CHAR(1), /*INDIVIDUAL RVR -- ROLL OUT*/MA502800
3 HIRL CHAR(1), MA502810
3 CL CHAR(1), MA502820
3 TDZ CHAR(1), MA502830
3 CEILMIN CHAR(4), MA502840
3 VISMIN CHAR(6), MA502850
3 RVRMIN CHAR(4), MA502860

A-8
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<tr>
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### FILE RCMSLIB MACLIB B2

#### VM/SP CONVERSATIONAL MONITOR SYSTEM

<table>
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<td>RVR</td>
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<tr>
<td>MSG</td>
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```
DCL CFLOG STATIC EXTERNAL, /*PF9 -- CONFIG PLAN LOG -- 7-03-86*/ MAS03440
2 CONFIND(96) FIXED BIN(15), /*CONFIG INDEX */ MAS03468
2 MSG CHAR(79), MAS03170
```

```
DCL WXYLOG STATIC EXTERNAL, /*PF9 -- WX PLAN LOG -- 7-03-86 */ MAS03480
2 TABLE(16), MAS03500
3 START CHAR(4), /*START TIME */ MAS03520
3 END CHAR(4), /*END TIME */ MAS03540
3 CEIL CHAR(5), MAS03560
3 VIS CHAR(6), MAS03580
3 DIR CHAR(3), /*SCREEN PGM CONVERTS II TO 2 CHAR*/ MAS03590
3 VLY CHAR(2), MAS03600
3 REMARKS CHAR(25), MAS03610
3 USER CHAR(3), MAS03620
3 ACCTIME CHAR(4), MAS03630
2 MSG CHAR(79), MAS03640
```

```
DCL CLSTLOG STATIC EXTERNAL, /*PF9 -- RWY CLOSURE LOG -- 7-03-86 */ MAS03680
2 TABLE(16), MAS03690
3 RWY CHAR(3), MAS03640
3 ARR CHAR(1), MAS03650
3 DEP CHAR(1), MAS03660
3 CLSTIME CHAR(4), MAS03670
3 OPTTIME CHAR(4), MAS03680
3 SURF CHAR(5), MAS03690
3 BRK CHAR(5), MAS03700
3 REMARKS CHAR(9), MAS03710
3 USER CHAR(3), MAS03720
3 ACCTIME CHAR(4), MAS03730
2 MSG CHAR(79), MAS03740
```

```
DCL EOPLOG STATIC EXTERNAL, /*PF9 -- EQUIP PLAN LOG -- 7-03-86 */ MAS03770
2 TABLE(31), MAS03780
3 RWY CHAR(3), MAS03790
3 EQUIPMENT CHAR(4), MAS03800
3 OTS CHAR(4), MAS03810
3 RTS CHAR(4), MAS03820
3 REMARKS CHAR(30), MAS03830
3 USER CHAR(3), MAS03840
3 ACCTIME CHAR(4), MAS03850
2 MSG CHAR(79), MAS03860
```

```
DCL PCSTAT STATIC EXTERNAL, /*PC EQUIP STATUS PANEL */ MAS03880
2 RUNWAY(12), /*SET BY PC USER*/ PC00030
3 CATII CHAR(1), /*Y=IN SER, N=NOT AVAIL*/ PC00040
3 CATIII CHAR(1), /*Y=IN SER, N=NOT AVAIL*/ PC00050
```

FILE RCMSLIB MACLIB D2 VM/SP CONVERSATIONAL MONITOR SYSTEM

3 LOC  CHAR(8),  /#LOC = COM + DM  PCS00060
3 CS   CHAR(7),  PCS00070
3 LOM  CHAR(1),  PCS00080
3 DM   CHAR(1),  PCS00090
3 MM   CHAR(1),  PCS00100
3 IM   CHAR(1),  PCS00110
3 ALS  CHAR(1),  PCS00120
3 FLASHER CHAR(1),  PCS00130
3 DME  CHAR(1),  PCS00140
3 FE.  CHAR(1),  PCS00150
3 MMID CHAR(1),  PCS00160
3 RVRROLL CHAR(1), /#INDIVIDUAL RVR -- ROLL OUT  PCS00170
3 MIRL  CHAR(1),  PCS00180
3 MIDWAY CHAR(1),  PCS00190
3 FLG6L CHAR(1),  PCS00200
3 FLG6LOC CHAR(1),  PCS00210
3 FLG3ID CHAR(1),  PCS00220
3 FLG33L CHAR(1),  PCS00230
3 FLG32L CHAR(1),  PCS00240
3 FLG31R CHAR(1),  PCS00250
3 FLG30R CHAR(1),  PCS00260
3 FE.  CHAR(1),  PCS00270
3 MIDWAY CHAR(1),  PCS00280
3 SPQ  CHAR(2),  PCS00290
3 GUST  CHAR(2),  PCS00300
3 MID DME CHAR(1),  PCS00310
3 VOR 4R CHAR(1),  PCS00320
3 DAS ORD CHAR(4),  PCS00330
3 DAS MID CHAR(4),  PCS00340
3 CAT 14R CHAR(1), /#/14R -- CAT II/III READINGS  PCS00350
3 CAT 14L CHAR(1), /#/14L -- CAT II/III READINGS  PCS00360
3 CFILO CHAR(8), /#CFILOMETER -- AAAAAAAA  PCS00370
3 UPS(3) CHAR(1),  PCS00380
3 FNG(3) CHAR(1),  PCS00390
3 MSG CHAR(79),  PCS00400

DCL PLNSTAT STATIC EXTERNAL, /#PLAN STATUS -- 7-83-86#MAS04250
2 RUNWAY(2), /#CLOSURE & EOP STATUS #MAS04260
3 ARB CHAR(1),  MAS04270
3 DEP CHAR(1),  MAS04280
3 LOC CHAR(1),  MAS04290
3 CS CHAR(1),  MAS04300
3 COM CHAR(1),  MAS04310
3 DM CHAR(1),  MAS04320
3 MM CHAR(1),  MAS04330
3 IM CHAR(1),  MAS04340
3 ALS CHAR(1),  MAS04350
3 FLASHER CHAR(1),  MAS04360
3 DME CHAR(1),  MAS04370
3 RVR CHAR(1), /#TOUCHDOWN RVR #MAS04380
3 RVRMID CHAR(1), /#INDIVIDUAL RVR -- MID POINT #MAS04390
3 RVRROLL CHAR(1), /#INDIVIDUAL RVR -- ROLL OUT #MAS04400
3 MIRL CHAR(1),  MAS04410
DCL DAYLITE CHAR(3) STATIC EXTERNAL, /*DAYLITE SAVINGS TIME=YES,NO*/ MAS04440

DCL 4 CHAR(62) STATIC EXTERNAL, /*FAATC DEFINITION -- 7-14-84*/ CHF00020
2 ID CHAR(24), /*12 ARR BITS & 12 DEP BITS*/ CHF00030
2 FLOW_INDEX FIXED BIN(15), /*1=A 2=AB 3=B 4=BC 5=C*/ CHF00040
2 FLOW CHAR(2), /*A, B, C, D, E*/ CHF00050
2 ARR(4) CHAR(3), CHF00060
2 DEP(4) CHAR(3), CHF00070
2 VFR_CAP(3) CHAR(3), /*VFR CAPACITY 1=TOT 2=ARR 3=DEP*/ CHF00080
2 IFR_CAP(3) CHAR(3), /*IFR CAPACITY 1=TOT 2=ARR 3=DEP*/ CHF00090

DCL 1 AREAUX STATIC EXTERNAL, /*AREA WX PANEL -- 2-11-87*/ ARE00010
2 AREA(21) CHAR(79), ARE00020
2 MSG CHAR(79), ARE00030

APPENDIX B

APPLICATION OF SENSOR DATA TO RCMS LOGIC
RCMS LOGIC APPLICATION

CURRENT DATA

**ALSF-2 (14R only)**
- **ALSF/SSALR switch**: System selection
- **Light switch**: Switch on or off (OTS)
- **Flasher switch**: Switch on or off (OTS)

**ALSF-1 (14L only)**
- **Light switch**: Switch on or off (OTS)
- **Flasher switch**: Switch on or off (OTS)

**SALSR (27L, 32R, 32L)**
- **SALSR switch**: Switch on or off (OTS)
- **SFL switch**: Switch on or off (OTS)
- 4L SALSR being replaced with Lion Lighting System

- **MALSR switch**: Switch on or off (OTS)
- **Flasher switch on 4R, 9L, 22R, 27R only**: Switch on or off (OTS)
- **9R & 22L follow brightness**
- **22L will have flasher switch eventually**
RCMS LOGIC APPLICATION

CURRENT DATA

**LOC (all runways)**

- **Main**: System on (primary channel)
- **Standby**: System on (secondary channel)
- **Abnormal-off**
  - steady: No failure
  - flashing (TI equipment): Failure
    - Out-of-service for maintenance

**Trans 1**

**Trans 2**

**Alarm**

**IM (14R & 14L only)**

**MM (all runways except 4L)**

- 14R, 14L, 27L, 32R are monitored
  - Switch on or off (OTS)

**OM (all runways)**

- 14R & 14L are monitored
  - Switch on or off (OTS)

**LOM/NDB (14R & 14L Monitored)**

- Switch on or off (OTS)
RCMS LOGIC APPLICATION

CURRENT DATA

GS (all runways except 4L)

Main System on (primary channel)
Standby System on (secondary channel)
Abnormal-off No failure
steady Failure
flashing (TI equipment)

Out-of-service (OTS) for maintenance

Trans 1 Switch on or off (OTS)
Trans 2 Switch on or off (OTS)

DME (9R, 14R, 14L, 32L, 27L)

Normal Switch on or off (OTS)
DME failure if associated localizer is on

DME Midfield (Wilcox model) Switch on or off (OTS)

VOR Switch on or off (OTS)

Manual Panel (14R & 14L)

CAT II and CAT III after completing checklist, user may enter 'Y'
into CAT II or CAT III for 14R or 14L

a. ILS e. CAT II i. ALS EG
b. RVR f. CAT III j. City EG
c. Other 14 up g. City lights k. CAT III
        h. Equipment EG

RCL Unit (14R)

CAT II & CAT III Light on or off indicates availability

Uninterrupted Power Sources

4R LOC, 4R GS (monitored), 9R GS If off, then system has 15 minutes of operation
RCMS LOGIC APPLICATION

CURRENT DATA

DASE (Chicago O'Hare and Midway)

A1 - A7
B1 - B7
A1 - A7
B1 - B7

Numeric values for altimeter setting

LLWAS (Centerfield Wind)

Wind direction
Wind velocity
Gust value

Numeric value - degrees displayed on PF-1
Numeric value - knots displayed on PF-1
Numeric value - knots

No crosswind advisory messages are generated if the wind is gusting.

Ceilometer (Two field units)

Cloud height conditions & ceiling

18 bits of data for the 2 ceilometers
(Scattered, broken, or overcast)
Midway Light Panel

**ILS**  
Not presently used

**LOC**  
Not presently used

**NBD**  
Not presently used

**31L**  
Not presently used

**22L**  
Not presently used

**13R**  
If light is on, 13R operations affect departures on 22L & 27L

**4R**  
Not presently used

Engine Generator

**Eng 1 (14R Engine)**  
Required for CAT II and CAT III

**Eng 2 (14L Engine)**  
Required for CAT II and CAT III

**Eng 3 (ASR-7 Engine)**  
Required for CAT II and CAT III

**High Intensity Runway Lights (runway edge lights)**

Switch on or off (OTS) depending on monitored by RVR the brightness level

**4R, 4L, 22R, 22L are not monitored**

**Touchdown RVR**

Readings of RVR, HIRL, Daylight, and status bit

**4R, 4L, 22R, 22L are not monitored**

**Mid RVR**

**14R and 14L**  
Readings of RVR, HIRL, Daylight, and status bit
APPENDIX C

FOREGROUND PROGRAM DOCUMENTATION
BEGIN

MISCELLANEOUS INITIALIZATION

SET CERTAIN DATA ITEMS TO INITIAL VALUES
SET FLAGS, ETC.

CALL ASSLNX 7
READ RECORDS APPROPRIATE TO THE GIVEN PANEL
CALL ASSULK 7

SET UP DATA AREAS FOR PROCESSING MDB RECORDS
COUNT MESSAGES IN CERTAIN RECORDS FOR LOOP CONTROL

READ CALL ASSULK 7

MOB

SET UP DATA AREAS FOR PROCESSING MDB RECORDS

MDB-ORIENTED INITIALIZATION

LEAVE = "YES"

YES

RETURN TO CALLER

NO

PF12 WAS USED PREVIOUSLY IN THIS EXECUTION OF THE PROGRAM

DATA-ENTER = "YES"

NO

YES

RE-INITIALIZE CERTAIN DATA FOR NEXT PDISPLAY & PASS OF PGM

INITIALIZE DISPLAY LOADLIST FIELDS FOR PDISPLAY

PDISPLAY (DISPLAY THE SCREEN AND WAIT FOR A RESPONSE)

FIGURE C-1. GENERIC SCREEN PROGRAM FLOW CHART (1 of 2 Sheets)
IF YES
SET LEAVE = "YES"

IF YES
RECALL
FCT
OF
PREVIOUS
DATA

DATA
ENTER
IF
PF12

YES
CHECK FOR ERRORS IN INPUT DATA

ARE THERE ERRORS ?

NO
RESOLVE & UPDATE MDB

YES
SET ERROR FLAGS & HIGHLIGHTS FOR DISPLAY

EXIT

RECALL
FCT
OF
PREVIOUS
DATA

IF
PF11

YES
PROCESS RECALL OF PREVIOUS DATA

NO
SCROLL
IF
ENTER

YES
PROCESS SCROLL COUNTS AND POINTERS FOR DISPLAY

NO

EXIT

EXIT

EXIT
ASSEMBLER LANGUAGE PROGRAMS USED IN THE FOREGROUND USER PROGRAMS

- ASRECME: Test MASTDB data on CMS7 to see if it needs to be reorganized.
- ASERASE: Erase city data file in user city (erase city data D).
- ASERASE: Erase old forecast work files in CMSB (file FURK & file FCST).
- ASERASE: Erase old record file in CMS7 - used when reorganizing MASTDB data.
- ASIFTM: Copy FURK data C to ORDDATA data H (NOTE: THIS PGM OBSOLETE).
- ASMRNT: Execute rename file (rename file FCST C file FURK C).
- ASMTRK: Move a FURK - used in forecast (NOTE: THIS PGM needs modification).
- ASRENAM: Execute rename exec - used in reorganizing MASTDB data.

- ASMMLK: Link to CMS2 write full screen data (ACC 198 C).
- ASMSW: Link to CMS7 master data base (ACC 197 C).
- ASMXW: Link to CMSH forecast files (ACC 198 C).
- ASXW: Link to CMSH user (CMS15) (ACC 199 D).
- ASYNW: Link to forecast files in user ERIC (CMSB) (ACC 197 B).
- ASMFW: Link to CMS7 WFS data for the WFS PGM (ACC 200 W).

- ASNLK: Unlink - File C & DET 197.

- ASNLK: Unlink - File C & DET 199.
- ASNLK: Unlink - File W & DET 200.

- ASNLK: Unlink - Screen processing programs to handle errors.

- TW: Send a special message to current background to wake it up.

- TW: Send a special message to forecast background to wake it up.

- TW: Send a special message to current background to wake it up.

- TW: Send a special message to forecast background to wake it up. (WAKEUP +00 03)

- TW: Send a special message to forecast background to wake it up. (WAKEUP +00 10)

- TW: Send and maintain the master alert panel (P49).

- TW: Then return in order to write a msg anywhere on the screen
A FORECAST PANEL PROGRAM is used in the FOREGROUND USER PROGRAM.

FIRST: READ THE DATA IN THE MASTER DATA BASE INTO THE PROGRAM.

SECOND: REORGANIZE THE MASTER DATA BASE.

IT IS THE MAIN LOOP OF THE FOREGROUND USER PROGRAM.

IT CALLS THE APPROPRIATE PANEL PROGRAM IN RESPONSE TO A USER'S REQUEST FOR A PANEL.

THE PANEL PROGRAM THAT SUBMITS A RUNWAY CONDITIONS PLAN FROM THE FORECAST MODE TO THE CURRENT MODE.

THE PANEL PROGRAM THAT SUBMITS A RUNWAY EQUIPMENT PLAN FROM THE FORECAST MODE TO THE CURRENT MODE.

THE PANEL PROGRAM THAT SUBMITS A WEATHER PLAN FROM THE FORECAST MODE TO THE CURRENT MODE.

WRITE A NEW WRITE FULL SCREEN DATA FILE (USED FOR UPDATING.)
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<th>Time 1</th>
<th>Time 2</th>
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**Legend:**
- Assembly: Assembly operations.
- Time: Time intervals for assembly operations.
APPENDIX D

GLOSSARY
ALS  APPROACH LIGHTING SYSTEM
ALSF  APPROACH LIGHTING SYSTEM WITH FLASHERS
CL  CENTERLINE LIGHTING
DASE  DIGITAL ALTIMETER SYSTEM
DMF  DISTANCE MEASURING EQUIPMENT
EG  ENGINE GENERATOR
F  FLASHERS
FFM  FAR FIELD MONITOR
GS  GLIDE SLOPE
HHMM  HOUR-HOUR-MINUTE-MINUTE
HIWI  HIGH INTENSITY RUNWAY LIGHTS (RUNWAY EDGE LIGHTS)
IM  INNER MARKER
LLWAS  LOW LEVEL WIND SHEAR ALERT SYSTEM
LOC  LOCALIZER
LOM  COMPASS LOCATOR AT THE OUTER MARKER
MALSR  MEDIUM INTENSITY APPROACH LIGHTING SYSTEM WITH RAIL (FLASHERS)
MM  MIDDLE MARKER
NDB  NONDIRECTIONAL RADIO BEACON
OM  OUTER MARKER
OTS  OUT-OF-SERVICE
RAIL  RUNWAY ALIGNMENT INDICATOR LIGHTS
RTS  RETURN-TO-SERVICE
RVR  RUNWAY VISUAL RANGE
RKY  RUNWAY
SFL  SEQUENCE FLASHING LIGHTS
SSALR  SIMPLIFIED SHORT APPROACH LIGHTING SYSTEM WITH RAIL (FLASHERS)
TDZ  TOUCHDOWN ZONE LIGHTS
VOR  VERY HIGH FREQUENCY OMNI-RANGE

COMPASS LOCATORS ARE LOM/NDB
APPENDIX E

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