SUBJ: AIR TRAFFIC OPERATIONAL REQUIREMENTS FOR THE PRE-DEPARTURE CLEARANCE SYSTEM (PDC)

1. <u>PURPOSE</u>. This order sets forth the basic operational requirements for PDC at qualifying airport traffic control towers.

2. <u>DISTRIBUTION</u>. This order is distributed at the branch level in Air Traffic, Systems Maintenance Service, and Research and Development Service in Washington and Air Traffic and Airway Facilities Divisions at regional headquarters.

3. <u>BACKGROUND</u>.

a. PDC is a micro computer-based interim air traffic control (ATC) automation system that automates the delivery of departure flight plan clearances for participating airlines. The bulk of its equipment is maintained in a rack in the tower equipment room with only a remote terminal in the tower cab. PDC captures the departure flight plan data of participating airlines via a passive tap on the flight data input/output (FDIO) line. This line interfaces the center Host Computer System (HCS) and the tower flight strip printer (FSP). The data are presented to the PDC operator on the terminal display in the form of a tabular list of aircraft identities (ACID) and a flight plan display area containing the departure flight plan clearance of the select ACID. Before relaying it to the airlines, the PDC operator may edit the flight plan by including any necessary local restrictions or information (i.e., initial altitude restriction, departure control radio frequency, or remarks). The resulting departure flight plan clearance is then transmitted to the airline network computer via data communications transfer. The airline network computer relays the clearance to the appropriate airline computer. The airline computer, in turn, relays it to the cockpit of an appropriately equipped aircraft or, alternately, to the gate printer for pickup by the pilot.

b. The benefits of PDC are that it (1) accurately presents a copy of essentially the same flight plan to both the controller and the pilot, (2) reduces delays in pilots receiving their clearances, (3) alleviates radio frequency congestion, and (4) reduces the voice-communications workload.

c. PDC will be eventually replaced when its functionality is incorporated into the Advanced Automation System Tower Control Computer Complex.

4. <u>DEFINITION OF PROBLEM</u>. Today's ATC clearance delivery process is cumbersome due to its repetitious nature, labor intensive in terms of controller voice-communications workload, and susceptible to human error. Also, radio frequency congestion with its consequent blocked or garbled communications has reached highly undesirable levels at many facilities. This is particularly true at high density airports where upwards of 1,000 departure flight plan clearances are delivered daily.

5. <u>SYSTEM NEED</u>. The National Airspace System has long been in need of a more efficient means of delivering routine ATC departure flight plan clearances to the cockpit; more efficient in terms of both speed and accuracy. While Mode S Data Link may meet this need in the future, an interim system is needed now.

6. <u>MINIMUM FUNCTIONAL REQUIREMENTS</u>. The following are the minimum functional requirements for PDC which are not all inclusive. They are identified in terms of system design, system capacity, data recording, and system utilities.

    a. System Design.

       (1) The capability shall be provided to configure PDC as either an active system (i.e., flight plans are to be presented to the PDC operator for editing) or a passive system (i.e., flight plans are to be automatically relayed to the airlines).

       (2) PDC shall capture and store all flight plans of participating airlines successfully transmitted across the en route HCS/terminal FSP interface.

       (3) Stored flight plans shall be identified by ACID displayed in a tabular list arranged in order of receipt.

       (4) A flight plan editing capability shall be provided to enable the PDC operator to append additional information. To facilitate this, the capability to select predefined information shall also be provided.

       (5) Selected flight plans shall be displayed in their strip image format followed by sufficient lines to accommodate operator appended data and airline transmitted data (i.e., gate identification or revised proposed time of departure (PTD)).

       (6) A transaction status shall be displayed for all selected flight plans to confirm airline acknowledgments for transmitted departure flight plan clearances.

       (7) An inhibit capability shall be provided to inhibit PDC transmission of any changed (revised, amended, or duplicate) flight plans captured on the FDIO line. This flight plan status shall be clearly indicated in the flight plan tabular list.

(8) A suppression capability shall be provided to suppress distinct items of information (i.e., preferential departure routes, coordination fixes, etc.) that may be redundant or confusing to the pilot. Any suppressed information shall be otherwise retained and identified as suppressed.

(9) The capability shall be provided to scroll through the ACID's of all flight plans in the pending list storage area.

(10) A flight plan deletion capability shall be provided to delete flight plans from storage either individually or by distinct group (i.e., those that have a PTD earlier than the operator entered time).

b. System Capacity.

(1) Sufficient computer memory shall be provided to capture, store, and process a minimum of 2,500 daily flight plans.

(2) Sufficient off-line storage shall be provided to archive a minimum of 15 days of PDC historical data.

c. Data Recording.

(1) A computer record shall be maintained identifying the nature, content, clock time, and date of all PDC transactions (i.e., the content of all departure flight plan clearances, all PDC communications with the airline network computer, and all airline network computer communications with the PDC system).

(2) A long-term automatic archiving capability shall be provided for maintaining the information identified above and other information that may be appropriate for facility record keeping. The capability for a forced PDC archive in response to a PDC operator command shall also be provided.

(3) Deleted departure flight plans shall not be included in the archive.

(4) All archived data shall be maintained in True ASCII format and be readily transferable from the archive storage medium to floppy disc.

d. System Utilities: User friendly utilities shall be provided for gross troubleshooting, maintaining the site configuration of PDC and for reducing archived information. This shall include, but not be limited to, the following specific capabilities:

(1) Real-time monitoring of flight data captured on the FDIO line and transmitted or received on the PDC/airline network computer communications line.

(2) Editing the participating airlines' identities and communications address tables.

      (3)   Editing predefined appended information fields or suppressed information tables.

      (4)   A scrolling display and/or printout of archived data by date, hour(s), or ACID.

      (5)   Copying of the above data to a floppy disc.

7.   <u>RELIABILITY</u>. PDC shall have an availability of .95 or greater where 1.0 represents total time with no interruptions exceeding 4 hours or occurring more often than once a month.

8.   <u>CONFIGURATION MANAGEMENT</u>. A configuration management process shall be established that is consistent with Order 1800.8, National Airspace System Configuration Management.

9.   <u>QUALIFYING FACILITIES</u>. To qualify for PDC, the primary airport served by the tower facility should have recorded a minimum of 150,000 air carrier operations in its last fiscal year report. The percentage of operations by a PDC participating airline may be considered as a weighted factor in operations counts.

10. <u>INITIAL CANDIDATE FACILITIES</u>.

Dallas-Ft. Worth (DFW)	Chicago-O'Hare (ORD)
San Francisco (SFO)	Los Angeles (LAX)
Atlanta-Hartsfield (ATL)	Greater Pittsburgh (PIT)
Boston-Logan (BOS)	John F. Kennedy (JFK)
LaGuardia (LGA)	Newark (EWR)
Denver-Stapleton (DEN)	St. Louis-Lambert (STL)
Washington National (DCA)	Miami International (MIA)
Honolulu (HNL)	Charlotte-Douglas (CLT)
Philadelphia (PHL)	Minneapolis-St. Paul (MSP)
Detroit Metropolitan (DTW)	Orlando-McCoy (MCO)
Memphis (MEM)	Baltimore-Washington (BWI)
Salt Lake City (SLC)	Raleigh-Durham (RDU)
Seattle-Tacoma (SEA)	Nashville (BNA)
Washington-Dulles (IAD)	Houston Intercontinental (IAH)
Las Vegas-McCarran (LAS)	Phoenix-Sky Harbor (PHX)

11. <u>PROGRAM MANAGEMENT</u>. PDC is being implemented as a rapid prototype system. To accommodate this special effort, program management is initially a joint responsibility of the Research and Development Service (ARD-1), Systems Maintenance Service (ASM-1), and Air Traffic Plans and Requirements Service (ATR-1).

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