

Confusion in Using Pre-Departure Clearances

Background

In 1990, the FAA implemented the Pre-Departure Clearance (PDC) program at a number of U.S. airports. This system allows pilots to obtain IFR clearances through aircraft ACARS units prior to taxi-out, thus eliminating the need for verbal communication on Clearance Delivery frequencies. The program's objective of reducing congestion on Clearance Delivery frequencies has been met. However, a number of ASRS incident reports indicate that pilots and controllers frequently experience confusion in using the PDC system.

In order to further investigate the causes of PDC-related problems, a team of ASRS analysts reviewed a relevant selection of incoming ASRS incident reports, and conducted interviews with aviation professionals at Oakland Center, San Francisco Tower, several major air carriers, NASA, and FAA Headquarters in Washington, D.C. This operational bulletin will focus on the two most frequently cited areas of concern: (1) inconsistent PDC formats, and (2) lack of confirmation procedures for PDC receipt.

Inconsistent PDC Formats

Revised Routings. The PDC problem most frequently reported to ASRS is confusing depiction of clearance revisions or amendments. Most PDC revisions are depicted by dashes before and after the revision. The original filed clearance is printed on a separate line immediately following the revised clearance. However, many flight crews apparently are not trained to observe the formatting differences between clearance revisions and filed clearances. As a result, flight crews often believe that revisions are erroneous (or separate clearances), and revert to their original filed clearances. A recent report from a flight crew illustrates:

"After checking in, the Center told us to proceed direct to 'ATL,' rest of route unchanged. A quick check of our route showed we were not going over ATL so we told Atlanta Center we were not filed that way. He asked how we were filed and then changed our clearance to 'ATL-VUZ-as previously cleared.' The

Sample PDC Formats

An ASRS analyst team obtained samples of actual PDC formats used by air carriers. Excerpts from several of these clearances are depicted on pages 1-3. Following each clearance is an explanation of the formatting inconsistency identified by ASRS.

SAMPLE 1

```
##DPTR CLRNC##
FLT 1234-05 SEA - SFO
XAL1234 SEA
T/B73J/G P2150 RQ330
XPDR 3572 EDCT 2200
SEATTLE2 RV J70
ELMAA
MAINT 9000 EXPT REQ
ALT 15NM AFT T/O
CONTACT DPTR CTL ON
120.4
CLNC VOID 15 MIN
AFTER EDCT
SEA ELMAA5 CVO
J589./ SFO
```

Problem: This PDC cites two departures, SEATTLE2 and ELMAA5. The flight crew must sort out which departure to use.



confusion I [felt] resulted from the display on our ACARS screen:

– HARAY SPA J14 ATL VUZ –
CLT HARAY ODF VUZ J52 DFW
J4 ABI J66 EWM J4 ./ SAN
SQK 2021 ALT 310

...I assumed the – HARAY SPA J14 ATL VUZ – part was a mistake, since it was not complete.” (ACN # 313340)

The type of confusion experienced by this flight crew over their PDC routing is potentially hazardous, as noted by a controller reporter to ASRS:

“It has been my experience...that several times per shift aircraft which have received PDCs with amended routings, have not picked up the amendment...I have myself on numerous occasions had to have those aircraft make some very big turns to achieve separation.” (ACN # 233622)

The sources consulted by ASRS suggested several potential solutions to this problem:

- ✓ Standardize PDC formats, so that pilots will know where to look for routing information and revisions.
- ✓ Show only one clearance line in a PDC, and insert any revisions into the clearance line. For example, instead of showing a route revision this way:
– SFO 6 SFO LIN J84 MVA J198 ILC –
SFO LIN OAL J80 ./ BWI
Show it this way:
– SFO 6 LIN J84 MVA J198 J80 ./ BWI
- ✓ Make the revision section more visible by tagging it (“REVISION”) or highlighting with asterisks or other eye-catching notation (****).
- ✓ Provide flight crews with training in how to recognize PDC revisions.

Assigned SIDs. Another source of confusion occurs when assigned Standard Instrument Departures (SID) information is placed *outside* the routing section of the PDC. An ASRS report explains:

Sample PDC Formats

SAMPLE 2

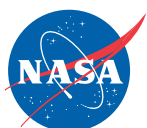
_HX PDC MESSAGE
PDC 25 XAL1234 2602
PHX
T/B72S/G P1616 455 200
–DRK6 DRK J92 BLD–
PHX DRK6 DRK J92./ SFO
EDCT 1818

Problem: There is no apparent difference between the revision –DRK 6 J92 BLD– and the filed clearance. This is potentially confusing to a flight crew.

SAMPLE 3

_EA PDC MESSAGE
PDC 10 XAL1234 3516
SEA
T/B72S/G P1455 872 330
–ELMAA5 CVO–
SEA J70 ELMAA J589./.
EDCT
ELMAA5.CVO DEPARTURE

Problem: The revision is between dashes: –ELMAA5 CVO–. ELMAA (the same routing) is repeated on the next line for no apparent reason.



"We were anticipating radar vectors to intercept J70 ELMAA, etc., which was the route listed on the PDC message against our flight plan. Seattle Departure questioned us if we were in the turn. We replied negative, we were runway heading expecting vectors. We referred again to the PDC with route J70 ELMAA, with no mention of any SID. Departure then questioned which SID we were assigned. Again referring [to] the PDC, we noticed that the ELMAA 5 departure was listed. However, it was printed on the top portion of the PDC message, not near the route lines which are always on the bottom portion of the message...The placement of the SID in the portion of the PDC reserved for remarks caused both pilots to believe no SID was assigned." (ACN# 229216)

This pilot and other ASRS reporters had a single recommendation for how to handle SID information in PDCs:

- ✓ Standardize the placement of SID information within the PDC.

Lack of Confirmation Procedures For PDC Receipt

Another frequently reported problem is flight crews' forgetting to obtain PDCs, and taking off without a clearance. This oversight occurs primarily at airports that do not have a confirmation procedure for PDC receipt by the flight crew. The first clue that the PDC has been forgotten usually is when the Departure controller gives the crew a transponder code and Departure frequency, as described by these ASRS reporters:

"Our company uses PDCs to retrieve ATC clearances on ACARS. I requested our clearance but it didn't come up. I left the aircraft for a couple of minutes and when I returned, I failed to request the clearance a second time. We completed all checklists and departed, still failing to realize we hadn't received the clearance. On climbout, we received the Departure frequency from the Tower. Departure gave us the correct squawk code. Since we had a copy of the company routing and were accustomed to using the Hornet SID, we were lucky we ended up doing what we were supposed to do. I was surprised that none of the controllers seemed

Sample PDC Formats

SAMPLE 4

A recent letter to ASRS from an air carrier pilot noted another type of PDC discrepancy. This pilot is involved with daily flights from Los Angeles and San Francisco to Vancouver (CYVR), British Columbia. The final flight segment is SEA DRCT PAE DRCT ACORD ACORD6 CYVR. The PDC duplicates the filed flight plan up to Seattle, but then truncates the rest of the clearance as shown:

```
PDC 173 FLT XAL1234/12
KSFO
T/DC9/A P2110 BQ350
XPRD 1720 EDCT 1310
-SF06 SFO RBL-
KSFO RBL J65
SEA***CYVR
```

Problem: *Because of the truncated PDC routing, the flight crew must call Clearance Delivery before takeoff to verify the actual route after SEA. The discrepancy between the filed and PDC routes creates confusion for the flight crew. The need to call Clearance Delivery also nullifies the advantage of using a PDC.*



aware that we didn't have the text of the clearance...On our [Before Start] checklist there is an item, "Radio/ACARS." That was our only opportunity to prevent this error, but neither of us looked up the Departure frequency or squawk code...Pilots need to cross-check themselves with some sort of reminder." (ACN #s 250847/250495)

ASRS sources had several suggestions for combatting the "forgotten PDC" problem:

- ✓ ATC facilities at PDC airports should consider requiring flight crews to read back their transponder codes prior to taxi.
- ✓ Airlines should consider adding the term "Code/Mode" to the Before-Takeoff checklist. In glass cockpit aircraft, "Code/Mode" is a reminder to check the transponder *code* and the navigation control *mode*. In non-glass cockpit airport, "Code/Mode" is a reminder to check the transponder setting. Flight crews may also opt to use this term as a personal verbal challenge before performing the Takeoff Checklist, or taking the runway for takeoff.



Users Note: The information presented in this bulletin is subject to some of the known limitations of ASRS data: (1) reported incidents cannot be independently verified; (2) reporters to ASRS may have a variety of reporting motivations and biases; (3) the voluntary nature of ASRS report submissions makes it impossible to accurately assess the full population of events for a given incident type. In spite of these limitations, ASRS report processing analysts have a unique vantage point in monitoring aviation system issues and problems from the incoming report flow of approximately 2,600 reports each month.

ASRS Contacts: Comments and questions related to this bulletin may be directed to ASRS staff at (650) 969-3969.

Summary of PDC Recommendations

- ✓ Standardize PDC formats, including placement of SID information, so that pilots will know where to look for routing information and revisions.
- ✓ Show only one clearance line in a PDC, and insert any revisions into the clearance line.
- ✓ Make PDC revisions more visible by labeling them ("REVISION") or highlighting with asterisks or other eye-catching notation (****).
- ✓ Include PDC formats and interpretation in pilots' recurrent training.
- ✓ Standardize confirmation procedures for PDC receipt. ATC should consider requiring flight crews to read back their PDC transponder codes prior to taxi.
- ✓ Airlines should consider adding the term "Code/Mode" to the Before-Takeoff checklist. Flight crews may also opt to use this term as a personal verbal challenge.

