National Airspace Redesign
High Altitude Redesign Briefing
for
Air Traffic Service Routes
HAR Phase 1 Functions

Design Concept:
- RNAV / closely-spaced parallel RNAV routes
  - Using structure where most efficient
- Navigation Reference System
  - Efficiently defining flight paths – tactical and planned
- Non-Restrictive Routing
  - Providing users increased routing flexibility
- ATCAA & SUA waypoints
  - Mitigating SUA effects for civilian aviation

Enabling capability:
- Radar monitoring, RNAV/Advanced RNAV, RNP
- RNAV/Advanced RNAV & FMS data bases capacity
- URET and Navigation Reference System
- RNAV/Advanced RNAV, access to airspace schedules
Jet Routes

- Routes based on NAVAID Location
- Flows that cross and converge
Q Routes - West Coast

- Additional routes in the same airspace
- Greater efficiency
- Less conflicts between routes
- Radar monitoring required
Q Routes – US/Canada

Note: Q Routes in Canada are not charted, but defined as “Fixed RNAV Routes” in Canadian Flight Supplement.
ATS “Q” Route

- Historically in the U. S., IFR navigation has been through a system of ground based navigation aids using Federal Airways/Jet Routes that require pilots to fly directly toward or away from the NAVAID.
- Area navigation (RNAV) provides users with an ability to fly direct routes between any two points.
- FAA recently adopted International Civil Aviation Organization (ICAO) definition of “Air Traffic Service Route” as a general term to include: Federal Airways, Jet Routes, Military Training Routes, and RNAV routes.
  - Rule changed to permit RNAV route to start/end @ point in space
  - Waypoint spacing on RNAV routes is 12 – 500 NM’s
- The US and Canada use "Q" as a designator for RNAV routes (US 1-499/Canada 500-999).
Initial 11 ATS RNAV “Q” routes were published and charted effective July 10, 2003.

Q Routes NOTAM’d N/A while initial implementation issues being resolved.

Initially GNSS (GPS) required to fly Q routes.
- Aircraft with /G have GPS capability
- Aircraft filing other RNAV suffixes may not have GPS capability

Q routes to be used in radar environment only, consistent with existing ATC RNAV procedures.
<table>
<thead>
<tr>
<th>Filed Suffix</th>
<th>Flight Plan</th>
<th>Tactical - Assign</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>I</td>
<td>Q Routes or specific waypoints</td>
<td>Q Routes/waypoints*</td>
</tr>
<tr>
<td>E</td>
<td>Q Routes or specific waypoints</td>
<td>Q Routes/waypoints*</td>
</tr>
<tr>
<td>F</td>
<td>Q Routes or specific waypoints</td>
<td>Q Routes/waypoints*</td>
</tr>
<tr>
<td>R</td>
<td>Q Routes or specific waypoints</td>
<td>Q Routes/waypoints*</td>
</tr>
<tr>
<td>Q</td>
<td>Q Routes or specific waypoints</td>
<td>Q Routes/waypoints*</td>
</tr>
<tr>
<td>G</td>
<td>Q Routes</td>
<td>Q Routes</td>
</tr>
</tbody>
</table>

* If Q routes were filed, ATC may assign another Q route; otherwise assign waypoints.
Q Route Clearance by Suffix

- **/A Aircraft are not RNAV Capable**
  - May not file Q routes or waypoints
  - May not be cleared onto Q routes or via waypoints by ATC

- **/G Aircraft are GNSS (GPS) Equipped**
  - May file Q routes
  - May be cleared tactically onto Q routes by ATC

- **/E, /F, /R, /Q aircraft may or may not have GNSS**
  - May file Q routes depending on equipage
  - May be cleared onto any Q route if a Q route was filed
  - Others may be cleared via waypoints, including waypoints of any Q route

- **/I aircraft**
  - May be cleared the same as /E, /F, /R, /Q
  - This category includes aircraft that may have lower navigational performance accuracy, e.g. LORAN
ATS “Q” Route

- Terminology and Phraseology for Q Routes has been included in:
  - Notice N7110.338, 7/3/03, Changes Order 7110.65N
  - Application: Radar separation shall be applied to all RNAV aircraft operating on a random (impromptu) route at or below flight level 450.
  - Published RNAV routes: State the letter “Q” followed by the route number in group form.
  - Example of phraseology: ”Cleared via Q one forty five” “Fly heading one-five-zero to join Q three”, “Cleared direct ELMAA, Q one, rest of route unchanged”
  - Notice N7110.339, 7/3/03 Changes Pilot Controller Glossary
    - Added: “Q Route – “Q” is the designator assigned to published RNAV routes used by the United States.”
Add Local LOA and Procedure Changes if needed