Subject: Non-Standard Holding Pattern Length Charting (SID/STAR)

Background/Discussion:
Standardized holding pattern data (referenced NAVAID, inbound/outbound course, distance) is stored in eNASR and the NASR HPF.txt subscriber file. Authoritative source for holding pattern data is the 8260-2 form. Such a form exists for each fix (RNAV WP, INT, NAVAID) in the NAS. ARINC 424 database suppliers rely on NASR and 8260-2 data to code procedural holding patterns in both the Enroute and Terminal environments. In many cases, discontinuities exist between 8260-2 holding data (authoritative source) and the IFR terminal procedure(s) that use holding patterns.

One such discontinuity exists between FAA/NACO STAR/DP charts and 8260-2 forms regarding non-standard holding pattern leg length. Many conventional (non-RNAV) SIDs and STARs depict holding patterns without 8260-2 derived distance information even in cases where the 8260-2 distance deviates from “standard”.

Per FAA AIP, Part 2 (ENR), 1.9.2.3, “standard” holding patterns are defined at/below 14,000 MSL to be 1 minute. Above 14,000 MSL, 1 ½ minutes. AIP 1.9.2.4, the subsequent section referencing DME/GPS ATD (along-track distance) holding, states that the controller or IAP chart with specify the length of the outbound hold.

Without charted distances, aircrews would have no way to determine that a given hold exists with non-standard leg lengths. See the TOMSN EIGHT STAR serving Denver, CO:

Holding patterns have been established at GOULL and FROGS intersections. Neither holding pattern is charted with a distance, leading to the assumption that both follow the aforementioned
“standard” of 1 1/2 minute legs. This creates a point of confusion since the 8260-2 forms for the fixes show GOULL’s holding pattern exists with 10 DME legs.

ARINC database suppliers would provide the hold record for GOULL including 10 DME. This disconnect between sources is confusing – while pilots are generally not familiar with 8260-series forms, they would be familiar with both FAA/NACO charts and GPS NavDB’s (if so equipped). Any attempt to “draw” the aforementioned hold from ARINC/GPS NavData at GOULL INT would lead to a discontinuity between avionics and chart.

The above issue is further compounded by the depiction of holding at FROGS. As with GOULL, the holding pattern at FROGS is not accompanied by a charted distance. The assumption of “standard” leg lengths would be confirmed in the FROGS, case, though. The 8260-2 form for FROGS shows an established holding pattern with the “standard” distance referenced in AIP.
Since both holding patterns appear identical on the chart with regards to holding pattern leg length, there would be no indication to aircrews that GOULL uses 10 DME legs and FROGS uses “standard” 1 ½ minute legs. GPS databases would create a distinction between GOULL and FROGS on this basis that is not reflected on current charts.

Current FAA Charting guidelines only include holding leg lengths when published on procedure 8260/7100 series forms. Under current guidelines, conventional procedures would require amendments to include charted leg lengths.

**Recommendations:**
Garmin’s recommendation is that holding pattern leg lengths should always be included on procedure source forms and charted regardless of procedure type (RNAV or Conventional).
Comments:

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