



# Federal Aviation Administration

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## Memorandum

Date: March 22, 2011  
To: Atlanta Tower Team Members  
From: Support Office  
Subject: Radar Position Symbols Associated with Limited Data Blocks

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The following refresher and attachments describe the different radar position symbols associated with limited data blocks and their associated meanings. Please note the different radar symbols and the meaning of each:

- ◇ Radar only track is a diamond
- Mode C, selected code is a square
- \* Mode C, nonselected code is an asterisk
- △ Non-Mode C, selected code is a triangle
- + Non-Mode C, nonselected code is a plus

Direct questions to your Front Line Manager or Operations Manager.

Attachment

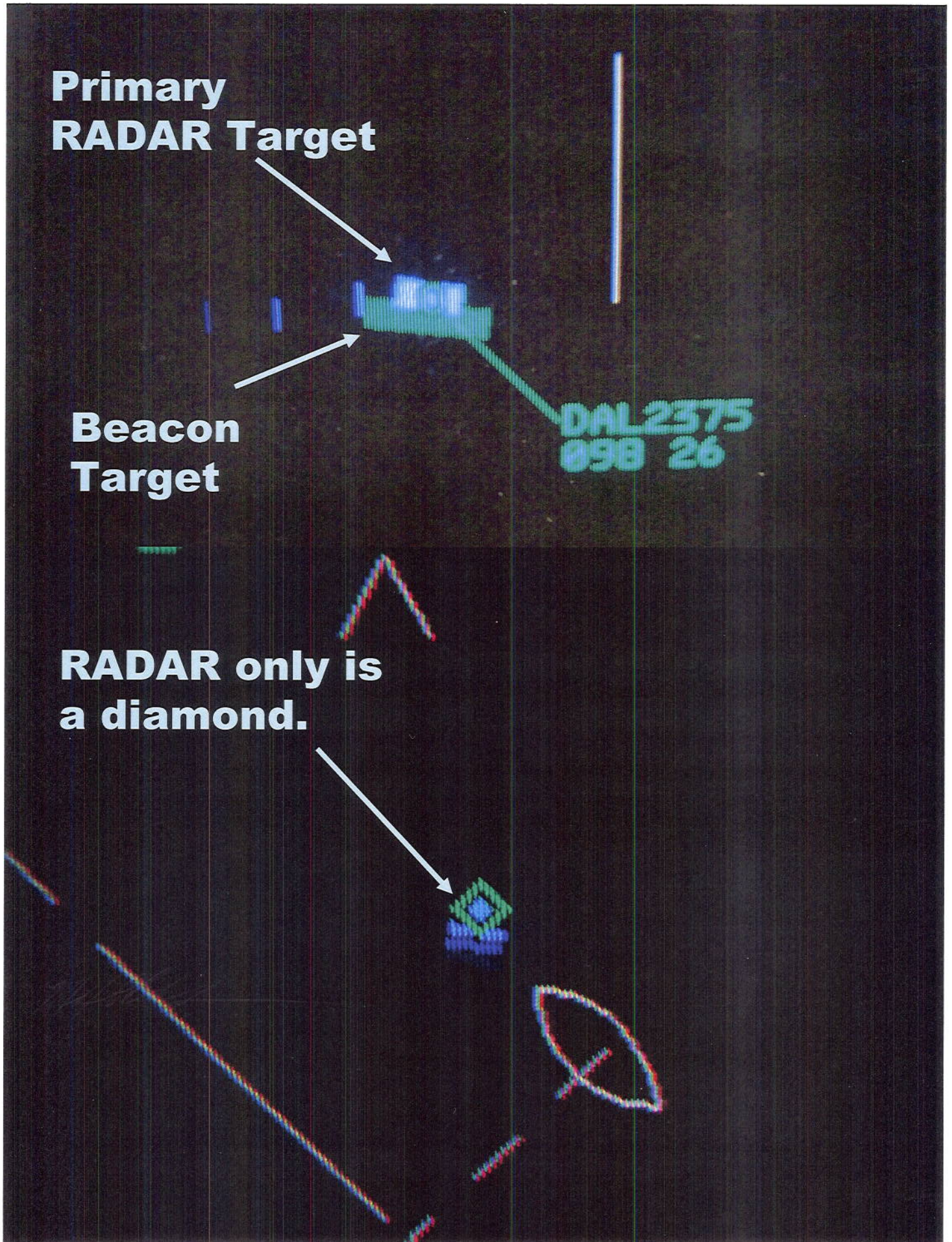


**Primary  
RADAR Target**

**Beacon  
Target**

**DAL2375  
098 26**

**RADAR only is  
a diamond.**





## Section 5. Radar Separation

### 5-5-1. APPLICATION

a. Radar separation shall be applied to all RNAV aircraft operating on a random (impromptu) route at or below FL 450 and to all published Q routes in the conterminous United States.

#### EN ROUTE

**EXCEPTION.** Aircraft equipped with IFR-certified GPS systems operating on point-to-point RNAV routes within the Anchorage Air Route Traffic Control Center (ARTCC) controlled airspace (excluding oceanic airspace) where ATC surveillance coverage is not available, may be provided nonradar separation, in lieu of radar separation, when an operational advantage will be gained.

#### REFERENCE-

FAAO JO 7110.65, Para 2-1-3, *Procedural Preference*

FAAO JO 7110.65, Para 4-1-2, *Exceptions*

FAAO JO 7110.65, Para 6-5-4, *Minima Along Other Than Established Airways or Routes*

b. Radar separation may be applied between:

1. Radar identified aircraft.

2. An aircraft taking off and another radar identified aircraft when the aircraft taking off will be radar-identified within 1 mile of the runway end.

3. A radar-identified aircraft and one not radar-identified when either is cleared to climb/descend through the altitude of the other provided:

(a) The performance of the radar system is adequate and, as a minimum, primary radar targets or ASR-9/Full Digital Radar Primary Symbol targets are being displayed on the display being used within the airspace within which radar separation is being applied; and

(b) Flight data on the aircraft not radar-identified indicate it is a type which can be expected to give adequate primary/ASR-9/Full Digital Radar Primary Symbol return in the area where separation is applied; and

(c) The airspace within which radar separation is applied is not less than the following number of miles from the edge of the radar display:

(1) When less than 40 miles from the antenna- *6 miles*;

(2) When 40 miles or more from the antenna- *10 miles*;

(3) Narrowband radar operations- *10 miles*; and

(d) Radar separation is maintained between the radar-identified aircraft and all observed primary, ASR-9/Full Digital Radar Primary Symbol, and secondary radar targets until nonradar separation is established from the aircraft not radar identified; and

(e) When the aircraft involved are on the same relative heading, the radar-identified aircraft is vectored a sufficient distance from the route of the aircraft not radar identified to assure the targets are not superimposed prior to issuing the clearance to climb/descend.

#### REFERENCE-

FAAO JO 7110.65, Para 4-1-2, *Exceptions*.

FAAO JO 7110.65, Para 4-4-1, *Route Use*.

FAAO JO 7110.65, Para 5-3-1, *Application*.

FAAO JO 7110.65, Para 5-5-8, *Additional Separation for Formation Flights*.

FAAO JO 7110.65, Para 5-9-5, *Approach Separation Responsibility*.

### 5-5-2. TARGET SEPARATION

a. Apply radar separation:

1. Between the centers of primary radar targets; however, do not allow a primary target to touch another primary target or a beacon control slash.

2. Between the ends of beacon control slashes.

#### NOTE-

*At TPX-42 sites, the bracket video feature must be activated to display the beacon control slash.*

3. Between the end of a beacon control slash and the center of a primary target.

4. All-digital displays. Between the centers of digitized targets. Do not allow digitized targets to touch.

#### REFERENCE-

FAAO JO 7110.65, Para 5-9-7, *Simultaneous Independent ILS/MLS Approaches- Dual & Triple*.

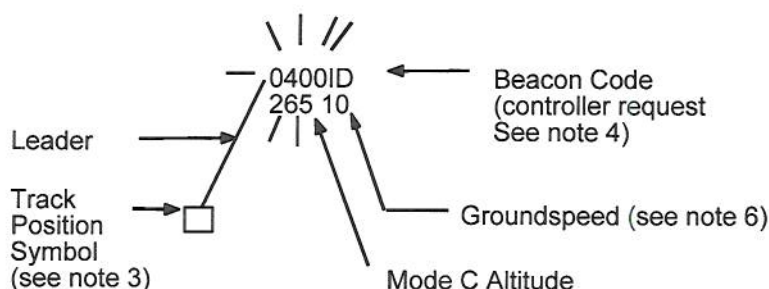
### 5-5-3. TARGET RESOLUTION

a. A process to ensure that correlated radar targets or digitized targets do not touch.

b. Mandatory traffic advisories and safety alerts shall be issued when this procedure is used.

### 3.3.1.1.1 Position Symbol

The position symbol associated with the LDB is located at the reported position (or predicted position if coasting) of the unassociated track. This position symbol identifies a beacon target, whether it has Mode C and also if a selected or nonselected beacon code is used (see Figure 3-2). This symbol will blink if the track is being displayed as a non-blinking LDB and reporting SPI and D\_IDENT\_LDB (SV) indicates position symbol blinking.



**Figure 3-2. Limited Data Block Format**

NOTES (Figure 3-2):

1. Emergency, radio failure, hijack, suspect aircraft and military interceptor codes are displayed in the first line (7700, 7600, 7500, 1236, and 7777, respectively).
2. Mode C altitude (X100 feet) is displayed in the second line (if altitude within filter limits). If track is radar only, RDR is displayed if a beacon/speed readout entry (F7,B) is made.
3. Track position symbology is as follows:

Mode C, Selected code is a square (□)  
 Mode C, Nonselected code is an asterisk (\*)  
 Non-Mode C, Selected code is a triangle (Δ)  
 Non-Mode C, Nonselected code is a plus (+)

Radar only is a diamond (◇). (Radar only track is LDB only from a speed readout (F7,B) entry.)

Site adaptable character C\_VFR\_SGL\_SYM (SV) for aircraft reporting a beacon code  
 C\_VFR\_ABC (SV) reserved for VFR aircraft operating frequently in the ARTS area.

Site adaptable character C\_VFR\_SGL\_SYM (SV) for aircraft reporting a beacon code  
 C\_VFR\_ABC (SV) specified for an unassociated VFR aircraft that falls within a selected beacon code block.

4. Beacon code is displayed in line 1 by controller keyboard request. Flashing LDB, beacon code, and ID are displayed for unassociated track reporting special position indicator (SPI) in a selected beacon code block with SEL filter enabled (and not adapted as a VFR single symbol for selected codes) or in an abnormal condition code block. "ID" is not displayed on suspect aircraft code 1236. For a normal condition code, the LDB will blink and "ID" will be displayed on an SPI track only if specified by D\_IDENT\_LDB (SV). If track is radar only, field is blank.