

# Declared Distance Concept for Civil Runways

Presentation to: Charting Workgroup

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Federal Aviation  
Administration



## ***Definition and References***

- Declared Distances are the distances an airport owner declares available for the airplane's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements. (Ref: A/C 150-5300-13, "Airport Design")
- There can be up to four (4) distances declared for each runway end.

## ***Definition and References***

- The 4 Declared Distances are:
  - Takeoff run available (TORA), is the runway length declared available for ground run of airplane.
  - Takeoff distance available (TODA), is the TORA plus length of remaining runway or clearway beyond far end of TORA.
  - Accelerate-stop distance available (ASDA), is the runway plus stopway length declared available and suitable for acceleration and deceleration of an airplane aborting a takeoff.
  - Landing distance available (LDA) is the runway declared available and suitable a landing airplane.

# **INTRODUCTION OF THE DECLARED DISTANCE CONCEPT**

- ***United Nations - International Civil Aviation Organization (ICAO) Adopted the Concept***
  - ***Amendment #23 to ANNEX 14, Volume I, “Aerodrome Design and Operations,” Dated 23 January 1969***
  - ***United States (FAA; AAS-100) voted “Yes”***
- ***FAA AC 150/5300-13, “Airport Design,” provided guidance in September 29, 1989***



## **ICAO'S PURPOSE**

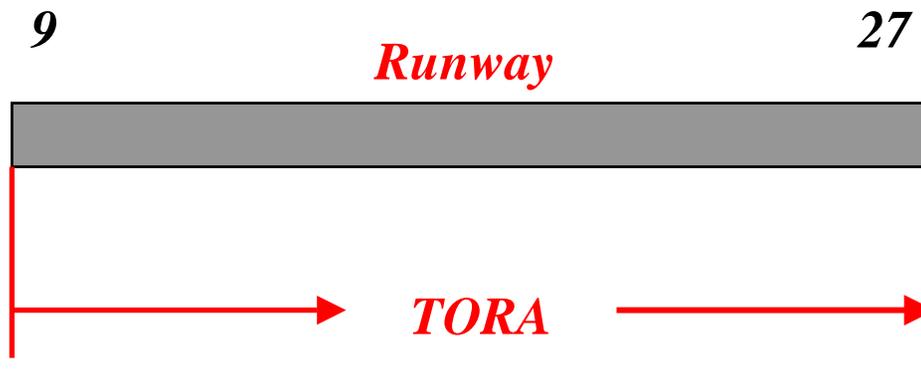
- **To Standardize the Calculation and Reporting of Available Runway Lengths for Use by *International Air Transport*:**
  - ***Takeoff Run Available (TORA)***
  - ***Takeoff Distance Available (TODA)***
  - ***Accelerate-Stop Distance Available (ASDA)***
  - ***Landing Distance Available (LDA)***

# **FAA AIRPORTS' PURPOSE**

- ***AAS-100 Introduced the Concept As One Means to Rectify Substandard RSAs, ROFAs, and RPZs at Constraint Airports (Appendix 14, Para 1)***
- ***The Concept Treats the Airplane's Runway Performance Requirements "Independently"***
  - ***Results:***
    - ***Greater Safety Margins - Near or Full Compliance***
    - ***Starting and Ending Locations of RSA, ROFA or RPZ Could Differ Then Using the Runway Ends***
    - ***Possibility of 2 RPZs Per Runway End:  
Approach/Departure RPZs***

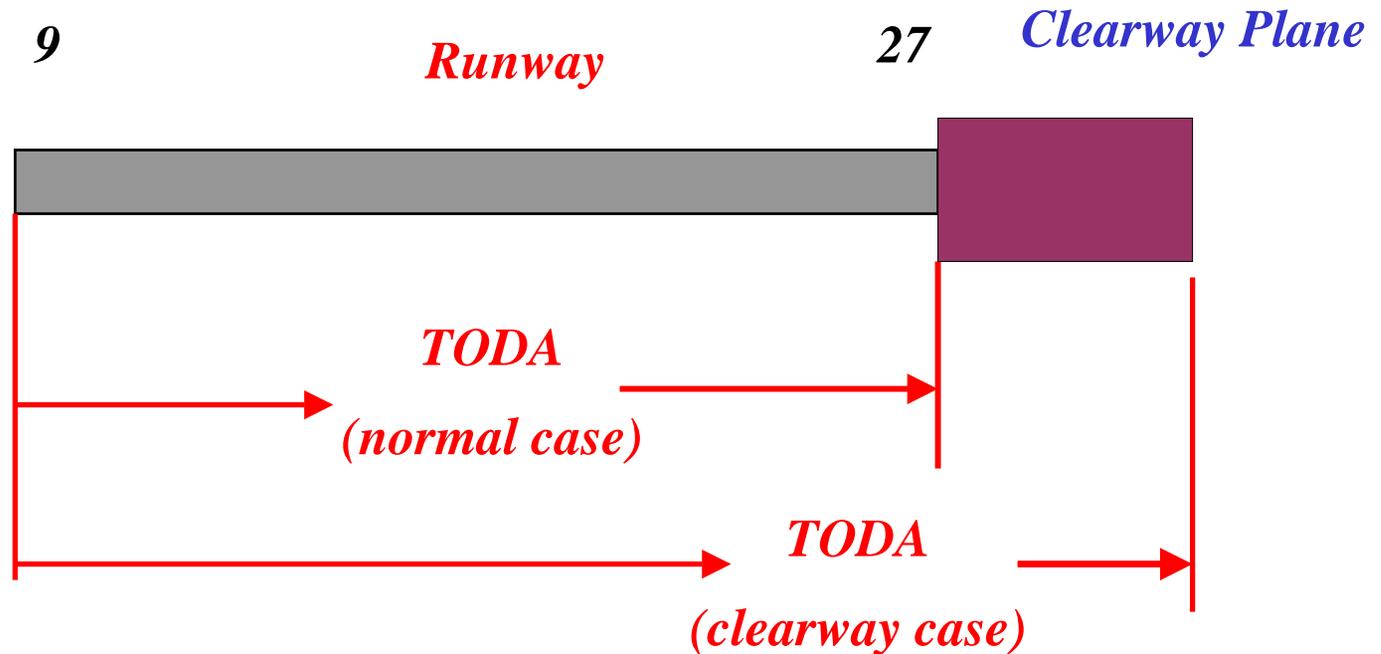
# DEFINITIONS

- **The Distances the Airport Authority declares available for Each Runway End are (Chapter 1, Para 2):**
  - **Takeoff Run Available (TORA)** – the runway length declared available and suitable for the ground run of an airplane taking off



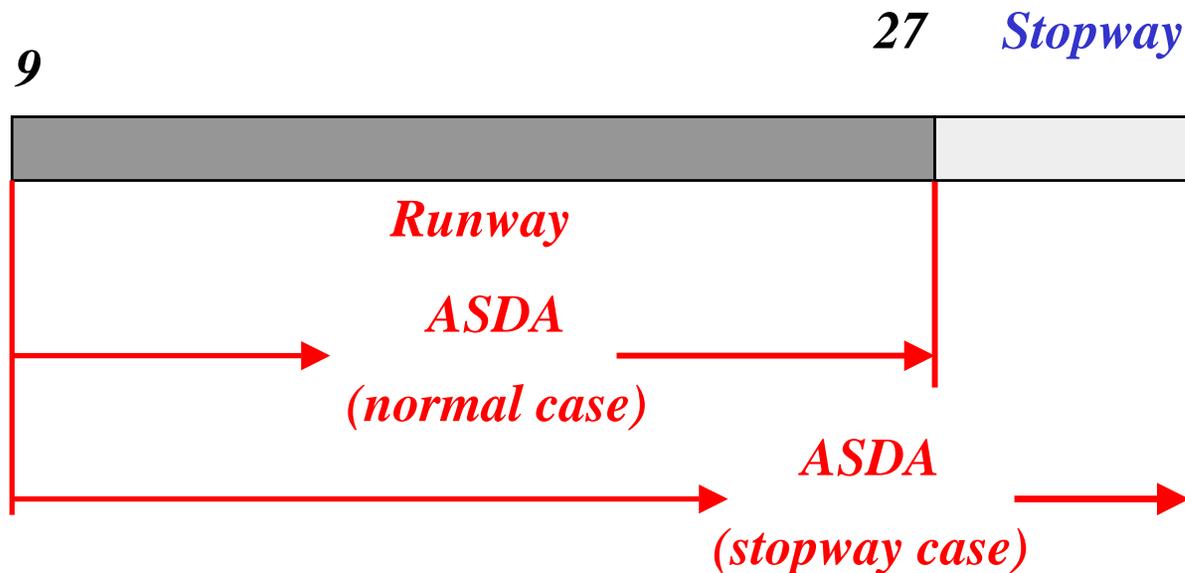
## DEFINITIONS (continued)

- **Takeoff Distance Available (TODA)** – the length of the TORA plus the length of the clearway, if provided



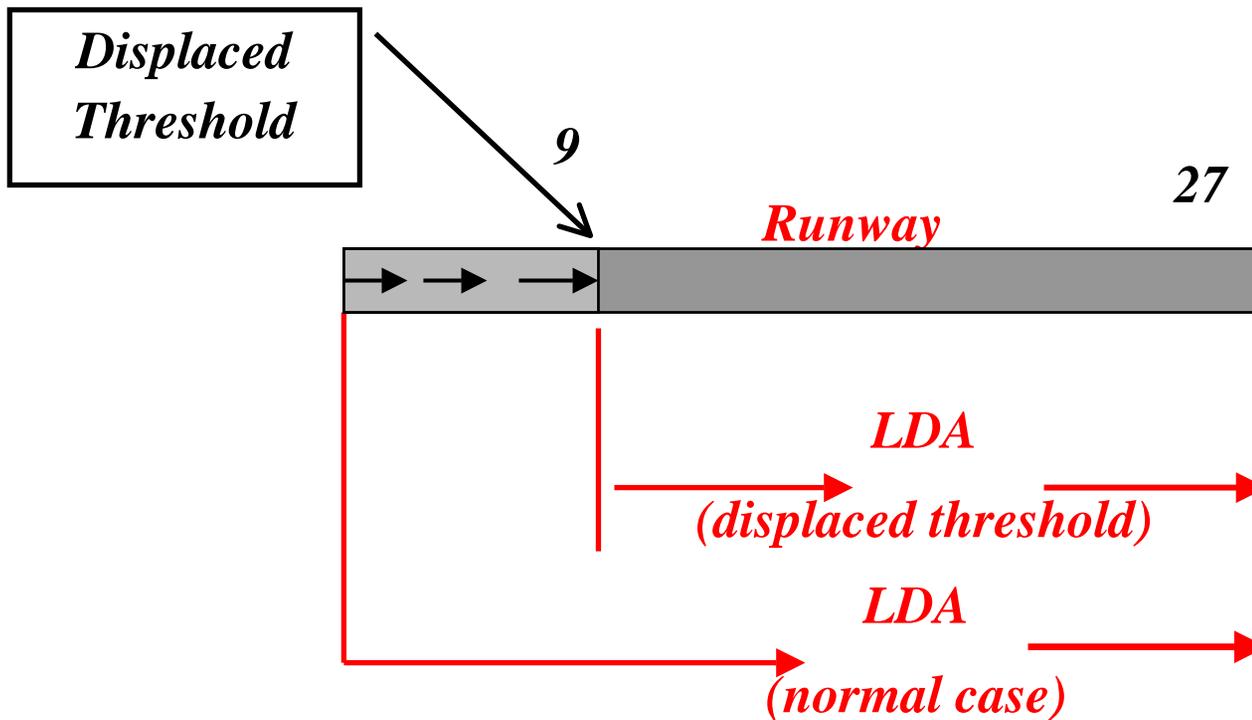
## DEFINITIONS (continued)

- **Accelerate-Stop Distances Available (ASDA)** – the TORA plus the length of the stopway, if provided for the acceleration and deceleration of an airplane aborting a takeoff



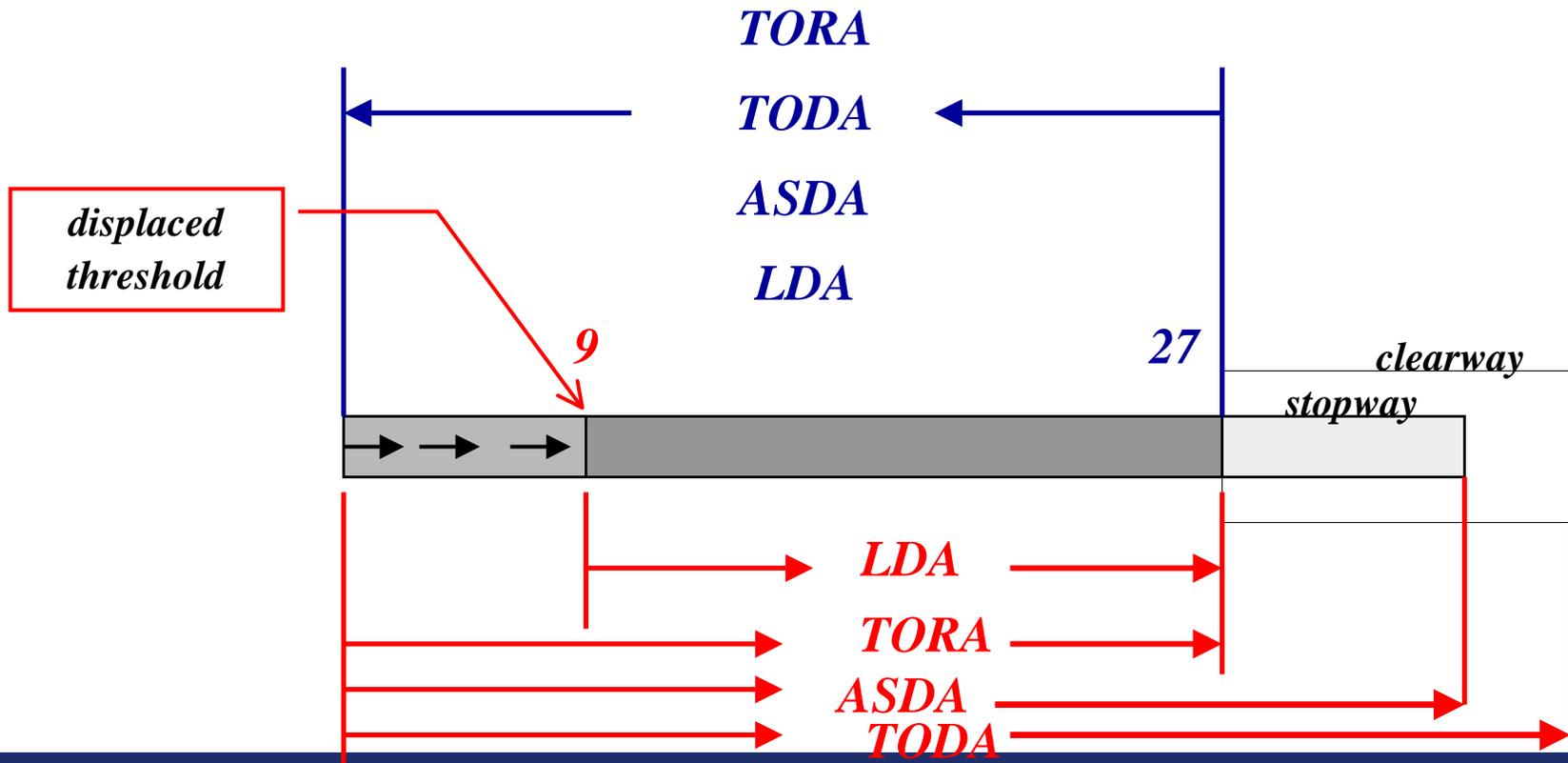
## DEFINITIONS (continued)

- **Landing Distance Available (LDA)** – the runway length declared available and suitable for landing an airplane



# Declared Distances: *Rwy 9* and *Rwy 27* Ends

*This example assumes full standard RSA and ROFA  
RPZ starts 200 feet off both ends of the RWY*



# **A/C 150/5300-13, APPENDIX 14 DECLARED DISTANCE POLICIES**

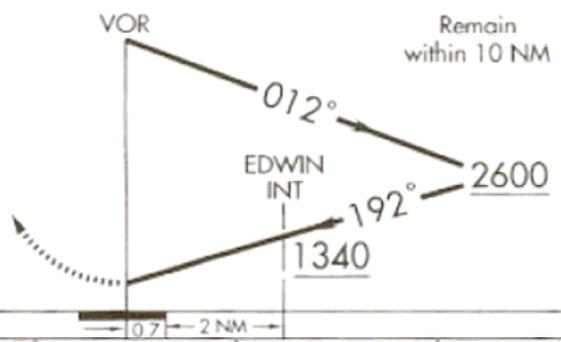
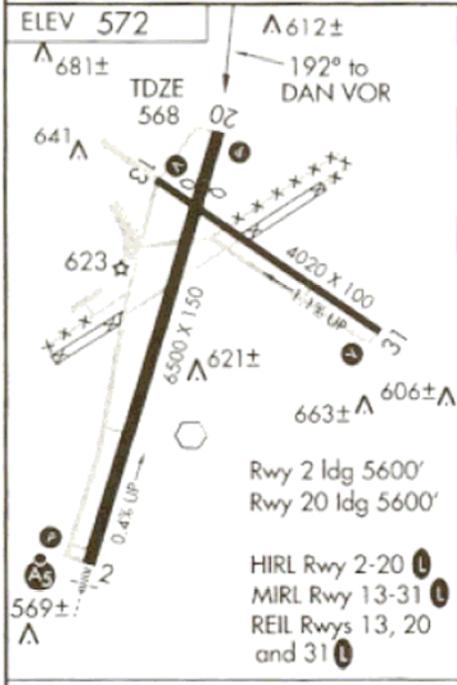
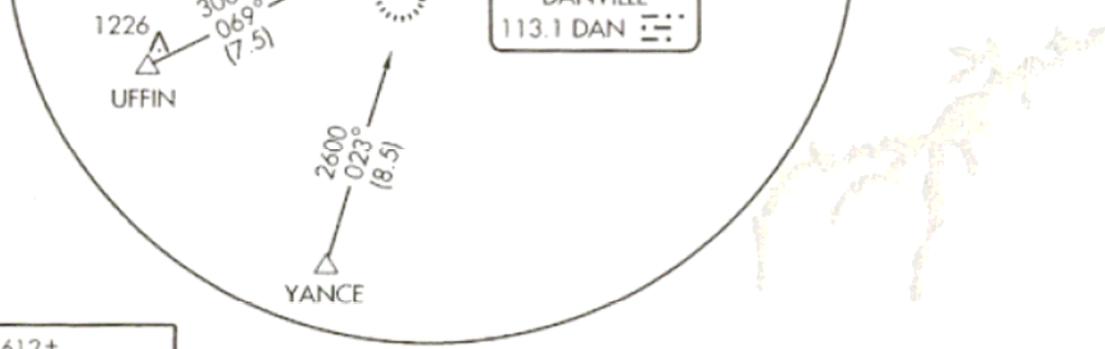
- ***RSA and ROFA Standards Happen Because Of:***
  - ***ASDA Requires Full Standard RSA & ROFA Only at the Far End of the Runway*** (App 14 Para 4(a)(3))
  - ***LDA Requires Full Standard RSA and ROFA at Both Ends of the Runway*** (App 14 Para 4(b))
  - ***Not TODA, It's the "All-engine" Takeoff Case***
    - ***If You're Safely Out of Here, You Don't Need a RSA or ROFA***
    - ***AC Does Warn Pilots to Know the Location of the Controlling Obstacle in the Departure Airspace*** (Para 2 of Declared Distances Definition)

# Runway Safety Area Enhancement

- **FAA ORDER 5200.8 - RUNWAY SAFETY AREA PROGRAM (October 1999)**
  - **Objective: All RSAs at Federally Obligated Airports and All Part 139 Airports Confirm to the RSA Standards in AC 150/5300-13, Airport Design**
  - **The ORDER Lists Several Alternatives to Achieve Full or Partial Compliance (Appendix 2, Para 3 of the ORDER), Three Example Are:**
    - **Runway reconstruction or reduction,**
    - **Declared Distances, and**
    - **EMAS** (Note #3 or #5, Tables 3-1, 3-2, 3-3, AC 150/5300-13)

# DECLARED DISTANCE CHARTING (Observations/Opinions?)

- ***If the Landing Distance Available (LDA) is less than full runway length, the landing distance available is shown on the Instrument Approach Plate***
- ***Example: Danville Regional Airport***



CATEGORY	A	B	C	D
S-20	1340-1 772 (800-1)	1340-1¼ 772 (800-1¼)	1340-2¼ 772 (800-2¼)	1340-2½ 772 (800-2½)
CIRCLING	1340-1 768 (800-1)	1340-1¼ 768 (800-1¼)	1340-2¼ 768 (800-2¼)	1340-2½ 768 (800-2½)
EDWIN INT MINIMUMS				
S-20	1000-1 432 (500-1)	1000-1¼ 432 (500-1¼)	1000-1½ 432 (500-1½)	1000-1½ 432 (500-1½)
CIRCLING	1060-1 488 (500-1)	1060-1¼ 488 (500-1¼)	1060-1½ 488 (500-1½)	1140-2 568 (600-2)

DANVILLE, VIRGINIA  
Amdt 1 07018

36°34'N - 79°20'W  
95

DANVILLE REGIONAL (DAN)  
VOR RWY 20



# **DECLARED DISTANCE CHARTING**

## **(Observations/Opinions?)**

- ***Declared Distances are published in the Airport Facility Directory (A/FD) in tabular form***
- ***Publication in the A/FD appears different for GA as opposed to Air Carrier Airports***
- ***If one runway at an Air Carrier airport has Declared Distances, then the distance table is published in the A/FD for all runways at that airport***
- ***Example: BWI Airport***

## BALTIMORE

BALTIMORE/WASHINGTON INTL THURGOOD MARSHALL (BWI) 9 S UTC-5(-4DT)

WASHINGTON

N39°10.52' W76°40.10'

COPTER

146 B S4 FUEL 100LL, JET A OX 1, 2, 3, 4 LRA ARFF Index D

H-10H, 12I, L-24G, 28E

RWY 10-28: H10502X200 (ASPH-GRVD) S-100, D-220, DT-500, DDT-790 HIRL CL

IAP, AD

RWY 10: ALSF2. TDZL. Thld dsplcd 550'. Tree.

RWY 28: MALS. VASI(V4L)—GA 3.0°TCH 60'. Thld dsplcd 500'.

Tree.

RWY 15R-33L: H9501X150 (ASPH-GRVD) S-100, D-220, DT-500,  
DDT-790 HIRL CL

RWY 15R: MALS. Twr.

RWY 33L: MALS. TDZL. VASI(V4L)—GA 3.0° TCH 55'. Tower.

RWY 04-22: H6000X150 (ASPH-GRVD) S-100, D-220, DT-500,  
DDT 728 HIRL

RWY 04: REIL. VASI(V4L)—GA 3.0° TCH 49'. Tree.

RWY 22: REIL. VASI(V4L)—GA 3.0°TCH 47'. Pole.

RWY 15L-33R: H5000X100

(ASPH-GRVD) S-30 D-60 HIRL 0.5% up NW

RWY 15L: REIL. Tree.

RWY 33R: MALS. REIL. PAPI(P4L)—GA 3.0° TCH 56'. Tree.

## RUNWAY DECLARED DISTANCE INFORMATION

RWY 10: TORA-10502 TODA-11502 ASDA-10502 LDA-9952

RWY 28: TORA-10502 TODA-10502 ASDA-10502 LDA-10002

RWY 15R: TORA-9501 TODA-9501 ASDA-9501 LDA-9501

RWY 33L: TORA-9501 TODA-9501 ASDA-9501 LDA-9501

RWY 04: TORA-6000 TODA-6000 ASDA-6000 LDA-6000

RWY 22: TORA-6000 TODA-6000 ASDA-6000 LDA-6000

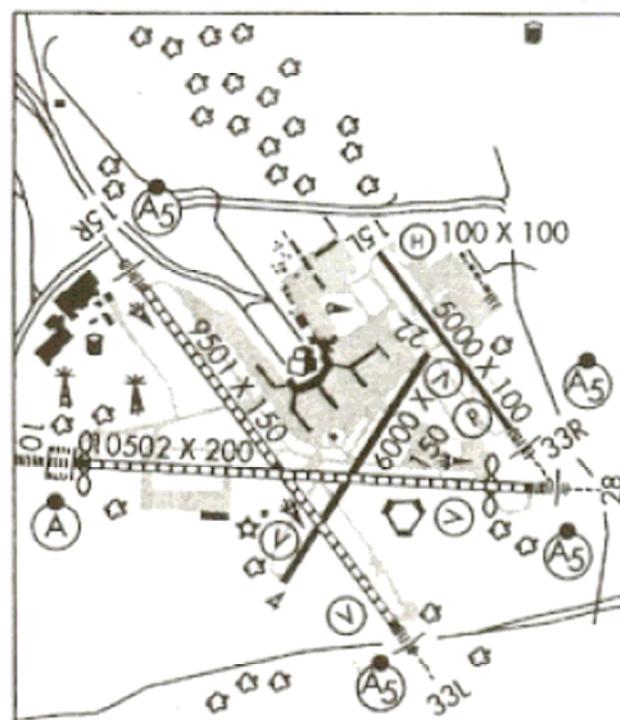
RWY 15L: TORA-5000 TODA-5000 ASDA-5000 LDA-5000

RWY 33R: TORA-5000 TODA-5000 ASDA-5000 LDA-5000

AIRPORT REMARKS: Attended continuously. Rwy 04-22 CLOSED multi-engined aircraft 0300-1200Z†. Rwy 04-22

CLOSED jet acft takeoffs. Rwy 22 CLOSED ldg jet acft. Rwy 04-22 restrictions apply except for excessive

crosswinds; emergencies; or non-availability of other rwys. Deer and birds occasionally on and invof arpt. Major



# DECLARED DISTANCE CHARTING (Observations/Opinions?)

- ***If an air-carrier airport has a simple displaced landing threshold on one runway, then the Declared Distances table is published in the A/FD for all runways***
- ***Example: Roanoke Regional Airport***



# **DECLARED DISTANCE CHARTING**

## ***(Observations/Opinions?)***

- ***If a General Aviation airport has Declared Distances, then the distances are published in the A/FD for that runway only (not for other runways on that airport)***
- ***Example: Danville Regional Airport***

**DANVILLE RGNL** (DAN) 3 E UTC-5(-4DT) N36°34.37' W79°20.17'

571 B S2 FUEL 100LL, JET A TPA—See Remarks

RWY 02-20: H6500X150 (ASPH-GRVD) S-90, D-130 HIRL

RWY 02: MALSR. PAPI(P4L)—GA 3.0°TCH 54'. Tree.

RWY 20: REIL. PAPI(P4L)—GA 3.0° TCH 50'. Thld dspcd 900'.

RWY 13-31: H4020X100 (ASPH) S-90, D-130 MIRL 1.1% up  
NW

RWY 13: REIL. VASI(V2L)—GA 3.0°.

RWY 31: REIL. VASI(V2L)—GA 3.0°. Tree.

**RUNWAY DECLARED DISTANCE INFORMATION:**

RWY 02: TORA-6500 TODA-6500 ASDA-5600 LDA-5600

RWY 20: TORA-6500 TODA-6500 ASDA-6500 LDA-5600

**AIRPORT REMARKS:** Attended Mon-Fri 1100-0300Z†, Sat-Sun  
1200-0000Z†. Arpt unattended Christmas Day. Rwy 02-20  
cracks in pavement. Birds and deer on and invof arpt. Ctc arpt  
administration prior to conducting specialized aero activities  
434-799-5110. TPA-1371 (800) lgt aircraft, 2071 (1500)  
turbine aircraft. Rwy 02 is designated calm wind rwy. **ACTIVATE**  
HIRL Rwy 02-20; MIRL Rwy 13-31; REIL Rwys 13 and 31 and 20;  
MALSR Rwy 02; VASI Rwys 13 and 31; PAPI Rwys 02 and  
20—CTAF.

**WEATHER DATA SOURCES:** ASOS 128.125 (434) 799-1701.

**COMMUNICATIONS:** CTAF/UNICOM 123.05

LEESBURG FSS (DCA) TF 1-800-WX-BRIEF. NOTAM FILE DAN.

RCO 122.2 (LEESBURG FSS)

Ⓡ WASHINGTON CENTER APP/DEP CON 124.05

**AIRSPACE:** CLASS E svc effective 1100-0300Z† other times CLASS G.

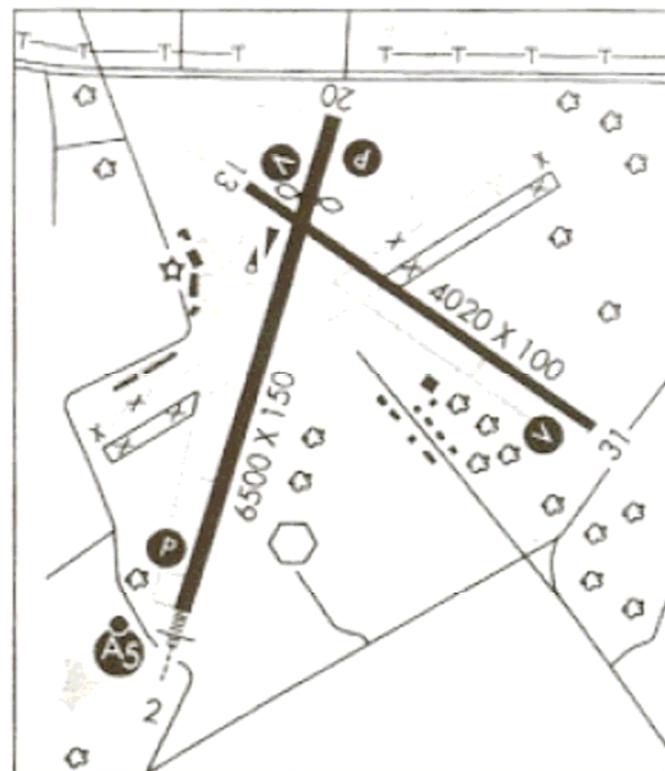
**RADIO AIDS TO NAVIGATION:** NOTAM FILE DCA.

SOUTH BOSTON (L) VORTAC 110.4 SBV Chan 41 N36°40.50' W79°00.87' 254° 16.7 NM to fld. 530/05W.

CINCINNATI

H-9C, 12H, L-22G, 27C

IAP



# DECLARED DISTANCE CHARTING

- *If a General Aviation airport has a simple displaced landing threshold, then only the displacement length is noted in the A/FD (not landing dist. available)*
- *Example: York Airport*

# PENNSYLVANIA

273

**YORK** (THV) 7 SW UTC-5(-4DT) N39°55.02' W76°52.38'

480. B S4 FUEL 100LL, JET A OX 3

RWY 17-35: H5188X100 (ASPH) S-20, D-20, DT-20 MIRL

RWY 17: REIL. PAPI(P4L)—GA 4.5° TCH 20'. Thld dsplcd 800'. Pole.

RWY 35: REIL. PAPI(P4L)—GA 3.75° TCH 23'. Thld dsplcd 740'. Pole.

**AIRPORT REMARKS:** Attended May-Sep 1100-0100Z†, Oct-Apr 1200-2300Z†. Twy clsd to acft with wingspan over 60'. Rwy 35 lgtd obstruction pole within 60' of controlling obstruction. Ldg fee.

**WEATHER DATA SOURCES:** ASOS 119.275 (717) 792-5529.

**COMMUNICATIONS:** CTAF/UNICOM 123.0

WILLIAMSPORT FSS (IPT) TF 1-800-WX-BRIEF. NOTAM FILE THV.

Ⓡ HARRISBURG APP/DEP CON. 124.1 CLNC DEL 121.65

**RADIO AIDS TO NAVIGATION:** NOTAM FILE CXY.

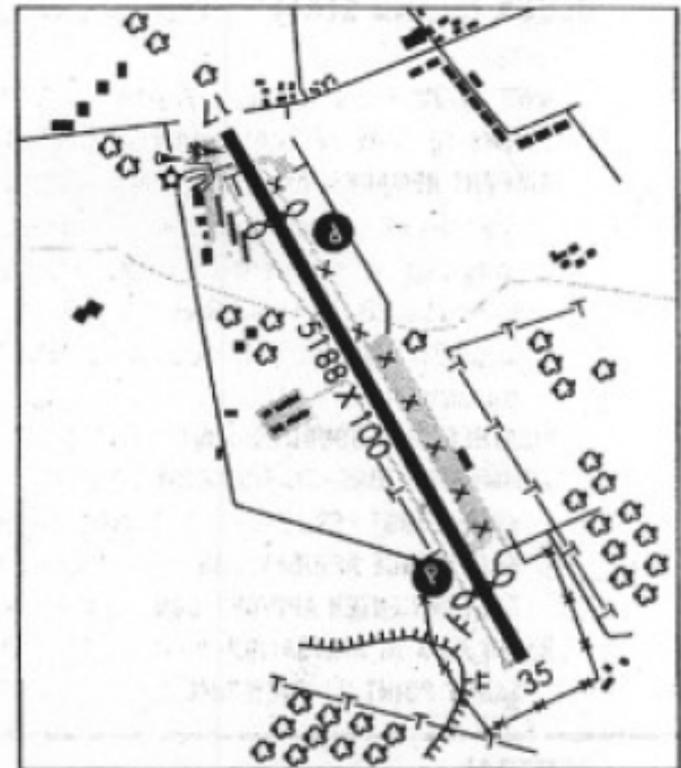
HARRISBURG (L) VORTAC 112.5 HAR Chan 72 N40°18.13' W77°04.17' 169° 24.8 NM to fld. 1301/10W.

NDB (MHW) 254 EUD N39°55.20' W76°52.65' at fld. NOTAM FILE THV.

WASHINGTON

H-10H, 12I, L-24G, 28F

IAP, AD



# Questions ?

