

AERONAUTICAL CHARTING FORUM
Instrument Procedures Group
Meeting 17-02 – October 24, 2017

RECOMMENDATION DOCUMENT

FAA Control #17-02-331

Subject: Visibility/climb gradient requirements for takeoff

Background/Discussion: Recent events have caused Southwest Airlines pilots to ask questions regarding the visibility and climb gradient requirements for takeoff. Charted information has led to pilot confusion that has prevented pilots from departing when all legal requirements were met. In this discussion several reported events are included to provide a clear picture of the difficulty pilots see during line operations.

Event #1: When assigned either the LAS BOACH8 Departure or the LAS SHEAD1 Departure pilots are questioning the different visibility and climb gradient requirements to fly the exact same track off the ground when departing runway 1L/R. The charted information for the runway 1L/R information is shown below to better describe the confusion the pilots reported.

BOACH 8 SID

This SID requires take-off minimums
(for standard minimums, refer to airport chart):
Rwys 1L/R: Standard with a minimum climb of 529'
per NM to 3700'.
Rwys 8L/R: Standard (or lower than standard,
if authorized)
Rwys 19L/R: Standard (or lower than standard,
if authorized) with minimum climb of 285' per
NM to 5600'.
Rwys 26L/R: Standard (or lower than standard,
if authorized) with minimum climb of 270' per
NM to 5500'.

SHEAD 1 SID

This SID requires take-off minimums
(for standard minimums, refer to airport chart):
Rwys 1L/R: 1100-3 with minimum climb of 500'
per NM to 6000'.
Rwys 8L/R: Standard (or lower than standard,
if authorized) with minimum climb of 400' per
NM to 8000'.
Rwys 19L/R: Standard (or lower than standard,
if authorized) with minimum climb of 483' per
NM to 9000'.
Rwys 26L/R: Standard (or lower than standard,
if authorized) with minimum climb of 470' per
NM to 9000'.

Jeppesen 10-9A Information

TAKE-OFF & OBSTACLE DEPARTURE PROCEDURE					
Rwys 1R, 0L/R			Rwy 19R		
Adequate Vis Ref		STD	With Min climb of 242'/NM to 3400'		
Adequate Vis Ref		STD	Other		
1 & 2 Eng	1/4	1	1/4	1	
3 & 4 Eng		1/2		1/2	
Rwy 19L			Rwy 26L		
Adequate Vis Ref		STD	With Min climb of 214'/NM to 2400'		Other
Adequate Vis Ref		STD	Adequate Vis Ref		
1 & 2 Eng	1/4	1	1/4	1	
3 & 4 Eng		1/2		1/2	
300-2 1/4					
Rwy 1L			Rwy 26R		
Adequate Vis Ref		STD	With Min climb of 270'/NM to 2400'		Other
Adequate Vis Ref		STD	Adequate Vis Ref		
1 & 2 Eng	1/4	1	1/4	1	
3 & 4 Eng		1/2		1/2	
300-1		400-2 1/2			

FAA Published Takeoff Minimums

MCCARRAN INTL (LAS)

TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

AMDT 8 17229 (FAA)

TAKEOFF MINIMUMS: Rwy 1L, 300-1 or standard with minimum climb of 269' per NM to 2300. Rwy 19L, standard with minimum climb of 256' per NM to 3400. Rwy 19R, standard with minimum climb of 242' per NM to 3400. Rwy 26L, 300-2 1/4 or standard with minimum climb of 214' per NM to 2400. Rwy 26R, 400 -2 1/2 or standard with a minimum climb of 270' per NM to 2400.

The pilots asked why are there differences between two area navigation (RNAV) departures using the same track off the ground. Also, when the pilot reviews the Jeppesen published takeoff visibility requirements for the SHEAD 1 SID they see a 1100-3 requirement requirement for runway 1L/R and there is a STD 1NM visibility on the Jeppesen 10-9 chart. Since there is no STANDARD statement on the published procedure what visibility and climb gradient requirement applies? In this event it was

raining with 2 NM visibility so could they takeoff legally? With no “STANDARD OR LOWER THAN STANDARD IF AUTHORIZED” statement what takeoff minimums apply? Last, a review of the FAA information does not publish the “LOWER THAN STANDARD IF AUTHORIZED” statement but it is shown on all runways except for 1L/R.

BOACH 8 SID (Rwy 1/R) – Standard visibility with a climb gradient of 529 ft/NM to 3700’
 SHEAD 1 SID (Rwy 1/R) – 1100-3 with a climb gradient of 500 ft/NM to 6000’

When the event was reviewed the team pulled the published FAA Takeoff Minimums and the runway 1R visibility information is not included in the text. Not only did we find the reported pilot confusion to be factual the team could not answer several questions and the questions have been forwarded to FAA Flight Standards.

Event #2: During an 1800 RVR low visibility day SAN Runway 9 was in use and pilots would not takeoff after reviewing the published takeoff minimums information. The flights were assigned the BORDER 7 departure but when the pilots attempted to determine their takeoff visibility requirements they could not find needed information for takeoff.

BORDER 7 SID

This SID requires take-off minimums (for standard minimums, refer to airport chart):
 Rwy 9: 400-1 with a minimum climb of 610’ per NM to 1900’, or standard (or lower than standard, if authorized) with a minimum climb of 686’ per NM to 1900’.
 Rwy 27: 400-2 1/2 or standard (or lower than standard, if authorized) with a minimum climb of 353’ per NM to 400’.

Jeppesen 10-9B Information Runway 9

Rwy 9
With Min climb of 290’/NM to 900’
400-1 ³ / ₄

Jeppesen 10-9B Information Runway 27

Rwy 27					
With Min climb of 353’/NM to 500’					Other
Both RVRs are required & controlling		Adequate Vis Ref	STD		
CL & HIRL	CL, or RCLM & HIRL		3 & 4 Eng	1 & 2 Eng	
TDZ RVR 5 Rollout RVR 5	TDZ RVR 10 Rollout RVR 10	RVR 16 or 1/4	RVR 24 or 1/2	RVR 50 or 1	400- 2 ¹ / ₂

FAA Published Takeoff Minimums

SAN DIEGO, CA (CON'T)

SAN DIEGO INTL (SAN)

TAKEOFF MINIMUMS AND (OBSTACLE)

DEPARTURE PROCEDURES

AMDT 9 16315 (FAA)

TAKEOFF MINIMUMS: **Rwy 9**, 400-1¾ w/min. climb of 290' per NM to 900. **Rwy 27**, 400-2½ or std. w/min. climb of 353' per NM to 500.

DEPARTURE PROCEDURE: **Rwy 9**, climb heading 095° to 900, then climbing left turn direct MZB VORTAC. Thence ...

The review team found the FAA and Jeppesen information did not agree with respect to the "STANDARD OR LOWER THAN STANDARD IF AUTHORIZED" statement for Runway 9. Jeppesen publishes this statement on their chart but it is not shown in the FAA information.

Since it is common for airlines to instruct their pilots to use the back of the Jeppesen 10-9 pages to determine takeoff requirements it is easy to see why many crews would not depart. The BORDER 7 SID states lower than standard minimums could be used but they are not published on the charts. More confusion set in when they saw lower than standard information published for Runway 27 but no information for Runway 9. The pilots questioned the legality of taking off without clearly defined charted information they could easily use.

Our review team determined it would be better to have no OpSpec visibility information published the takeoff minimums section of charts (Jeppesen 10-9 pages). Then, when a pilot saw the term "STANDARD or LOWER THAN STANDARD IF AUTHORIZED" they would know to use the FAA OpSpec information approved for each carrier.

Recommendations:

1. Provide clarity for the terms "STANDARD" and "LOWER THAN STANDARD" in FAA guidance.
2. To reduce the pilot confusion, remove OpSpec information from published charts with the exception of the terms "STANDARD OR LOWER THAN STANDARD IF AUTHORIZED" and the FAA currently uses this format. Each holder of OpSpec can provide accurate guidance to their crews based on their level of approval.
3. Ensure all information on charted procedures provide the pilot with consistent, accurate, easy to read visibility and climb gradient information.

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Date: October 5, 2017

INITIAL DISCUSSION – MEETING 17-02: Gary McMullen (Southwest Airlines) briefed ([view](#)) an issue related to takeoff minimums. He began by showing two SIDs at Las Vegas (BOACH 8 and SHEAD 1) that have identical initial ground tracks, but significantly different takeoff minimums. Gary wanted to know why they are different and mentioned he queried the FAA but received no response as of yet. Gary also relayed a confusing situation that recently occurred whereby flight crews were unsure of whether or not they could depart from runway 9 in San Diego with visibility less than one mile. Gary proposed some recommendations related to the use of “standard” and “lower than standard if authorized” as well as other charting recommendations for consistency. Rich Boll (NBAA) clarified that visibility published on the back of page 10-9 (Jeppesen charts) is tied to the ODP and is separate from visibility published on a SID, adding this was a previous ACF item separating the minimums for separate types of procedures. Lengthy group discussion followed. John Blair mentioned the government charts don’t publish operation specification information on charts to avoid confusion. John Bordy (Flight Procedure Standards Branch) took an action to research the questions posed by Gary to Flight Standards on the visibility/climb gradient differences as shown in the example slides. Tony Lawson (Aeronautical Information Services) indicated the Las Vegas procedures were amended at different times, therefore they were evaluated with different information and will check on if there’s a project plan to harmonize them. Ted Thompson (Jeppesen) discussed some company history and policies on publishing lower than standard visibility minimums for air carrier operations specifications on the charts. Ted mentioned they are looking at options to display differently the air carrier ops information internally.

Action Items:

John Bordy will research the specific questions raised by SWA and discuss the recommendations posed by Gary internally.

Tony Lawson will research if there’s a project to harmonize the takeoff minimums at Las Vegas runway 1R.

Status: Item accepted.

Meeting 18-01: John Bordy (Flight Procedure Standards Branch) provided an update on the issue related to different takeoff minimums for the same runway at Las Vegas. John firstly stated that Flight Standards believes there is sufficient guidance available related to the meaning of “lower than standard” takeoff minimums since that is controlled by operations specification. Gary McMullen (SWA) agreed no additional guidance/policy is expected. Regarding the different minimums on the Las Vegas BOACH and SHEAD SIDs, Tony Lawson (Aeronautical Information Services) advised the LAS RWY 1 BOACH and SHEAD SIDs will soon be amended. John mentioned the current difference is likely attributed to the procedures being evaluated at different times, without crosschecking impact on the other procedures to the same runway. John will explore possible policy language changes to look encourage consistency across the procedures when making amendments.

Action Items:

- Aeronautical Information Services will report on amendment efforts for the Las Vegas BOACH & SHEAD SIDs to harmonize the takeoff minimums.

- John Bordy will determine if there is any policy language needed to help ensure consistency in takeoff minimums for the same runway.

Status: Item open.

Meeting 18-02: John Bordy (Flight Procedures and Airspace Group) indicated that Aeronautical Information Services did not provide an update to the status of amending the BOACH and SHEAD departure procedures so the takeoff minimums are identical. John will examine current policy within FAA Order 8260.46 to determine if it is possible to add a requirement to ensure that when one departure procedure is amended, any other like procedures are concurrently examined to determine if amendments are necessary.

Action Items:

- John Bordy will report on the status of the two specific procedures.
- John Bordy will look at any possible policy changes.
- Issue #18-02-338 incorporated into this issue.

Status: Item open.

Meeting 19-01: John Bordy, Flight Procedures and Airspace Group, briefed the issue directly from the [slide](#): discussing a summary and current status. John Bordy indicated a new requirement was added to the periodic review section of draft Order 8260.19I to ensure takeoff minimums are consistent SID's from the same runway that share similar initial runways. John Bordy reported that scheduled amendments to the BOACH and SHEAD SID's were cancelled, as those two procedures will now be cancelled (and replaced) as part of a larger project in 2020.

Action Item: John Bordy will report on status of issue.

Status: Item open.

Meeting 19-02: John Bordy, FAA Flight Procedures and Airspace Group, briefed the issue summary and current status from the [slide](#). Language has been added to the draft of Order 8260.19I to prevent this issue. John will report the status of 8260.19I at the next meeting. Lev Prichard, Allied Pilots Association, noted some discrepancies between the textual takeoff minimums and SID's with the same routing, and suggested comparison shouldn't be only between SID's, but between SID's and textual takeoff minimums as well. John will check to ensure language is included that will cover obstacle departure procedures as well as SID's; he believes it is in Order 8260.46, but will make sure the Order 8260.19 periodic review requirements address this as well.

Action Items:

- FAA Flight Procedures and Airspace Group will report status of order 8260.19I
- FAA Flight Procedures and Airspace Group will review Orders 8260.46 and 8260.19 to confirm requirements for the consistent minimums between obstacle departure procedures and SIDs, and for periodic review requirements

Status: Item open.

Meeting 20-02: Jeff Rawdon, FAA Flight Procedures and Airspace Group, briefed the issue summary and current status from the [slide](#). With revisions to Orders 8260.19I, and a confirmation that the Orders 8260.19 and 8260.46 have consistent requirements, Jeff suggested closure of the issue, and Gary McMullin, Southwest Airlines, concurred. Gary Fiske, FAA ATC Procedures (Terminal) Team, inquired if the specific procedures listed had been revised, and Gary McMullin said revisions are in progress.

Status: Item closed.