Federal Aviation Administration

55054002 EN ROUTE RADAR ASSOCIATE CONTROLLER TRAINING PART B: NONRADAR

Handout 1: Practice Exercises 1, 2, 3

Lesson 1: Longitudinal Separation

Version: 1.0 2022.08

INSTRUCTOR HANDOUT

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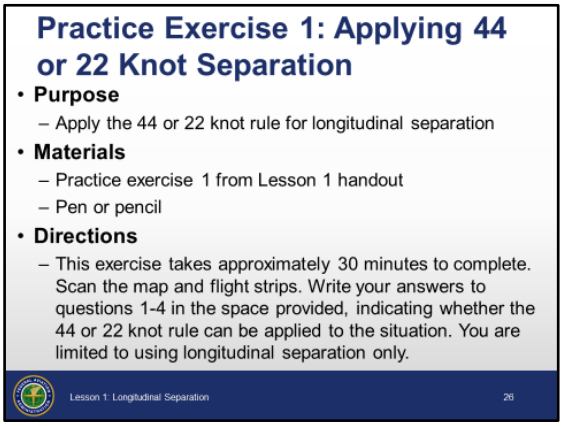
PRACTICE EXERCISE 1: APPLYING 44 OR 22 KNOT SEPARATION



Purpose

Apply the 44 or 22 knot rule for longitudinal separation

Materials

Handout: *HO01_L01*

- Practice exercise 1 from Lesson 1 handout
- Pen or pencil

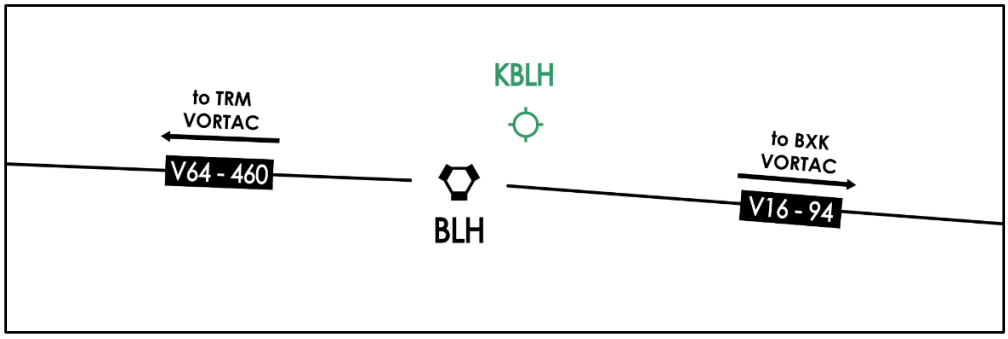
Directions

This exercise takes approximately 30 minutes to complete. Scan the map and flight strips. Write your answers to questions 1-4 in the space provided, indicating whether the 44 or 22 knot rule can be applied to the situation. You are limited to using longitudinal separation only.

Allow students to complete each question and review the answer before proceeding to the next question. Flight strips are included in PowerPoint presentation.

PRACTICE EXERCISE 1: APPLYING 44 OR 22 KNOT SEPARATION *(CONT'D)*

1.



N84PR C414/T T210 G212 Ø2 226 Ø1	BXK Ø220	Ø2 47 Ø247 BLH	8Ø✓	TRM	KDVT PXR V16 BLH V64 SLI KLGB	1572
N21HA C310/T T168 Ø2 2Ø6 Ø1		↑ KBLH PØ225		TRM 8Ø	KBLH BLH V64 HEMET KHMT/Ø1ØØ	2167

Time is 0248. What is the earliest time N21HA may be released? Explain your answer.

Answer: *0252 is the earliest departure time (reported BLH time + 5 minutes).*

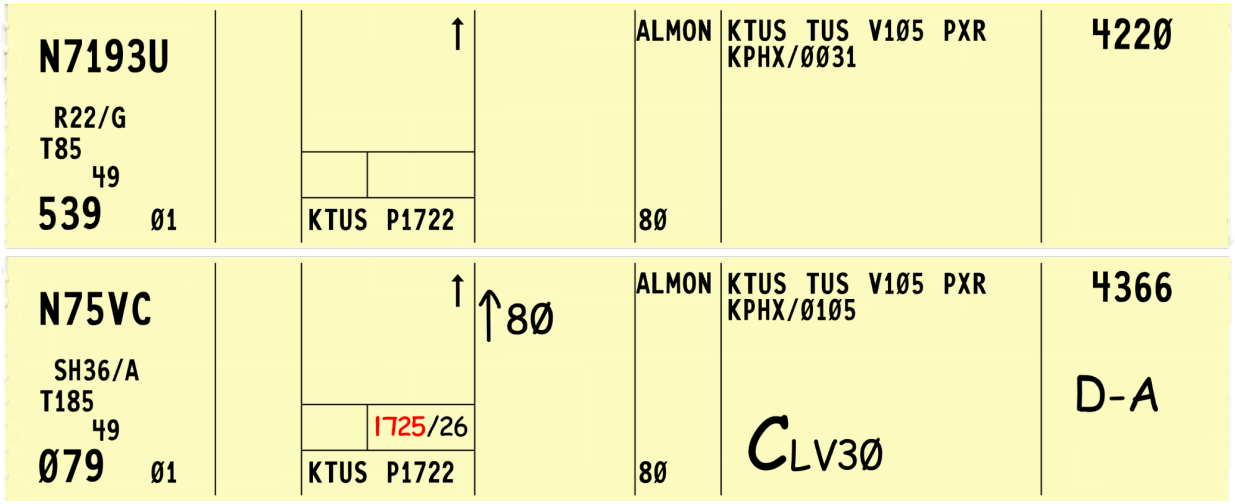
Explanation: *N21HA will follow N84PR which has reported over BLH VORTAC.*

N21HA speed is 168 knots; N84PR speed is 210 knots, 42 knots faster.

Minimum separation is 5 minutes using the 22 knot rule.

PRACTICE EXERCISE 1: APPLYING 44 OR 22 KNOT SEPARATION *(CONT'D)*

2.



Time is 1726. What is the earliest time N7193U may be released? Explain your answer.

Answer: *1729 is the earliest departure time (reported departure time + 3 minutes).*

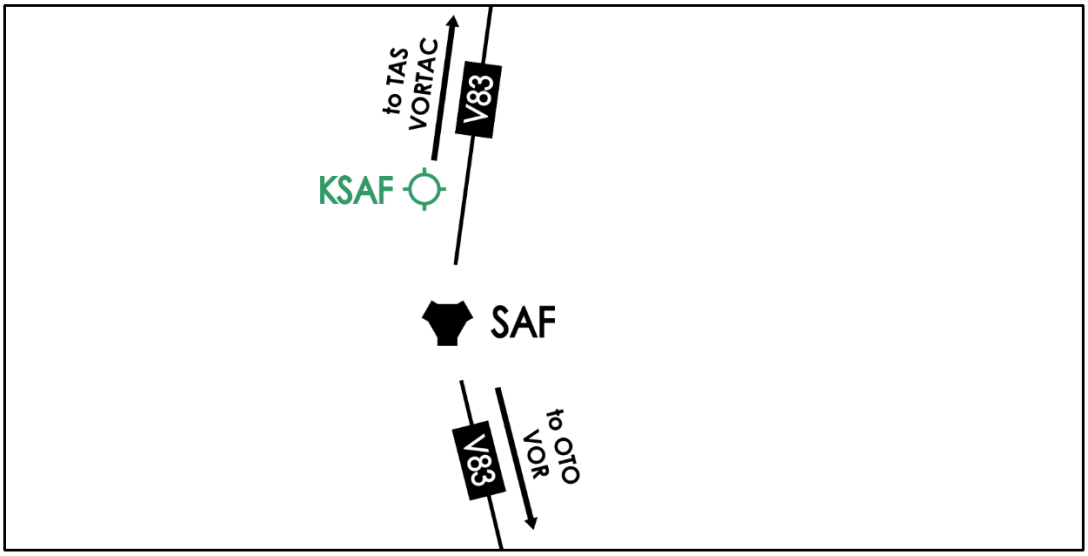
N7193U will follow N75VC off the same airport.

N7193U speed is 85 knots; N75VC speed is 185 knots, 100 knots faster.

Explanation: *Minimum separation is 3 minutes using the 44 knot rule.*

PRACTICE EXERCISE 1: APPLYING 44 OR 22 KNOT SEPARATION *(CONT'D)*

3.



N7178Q C172/G T130 G111 16 356 Ø1	TAS Ø22Ø	2Ø 22 22 SAF	9Ø✓	OTO	KMVI ALS V83 CME KROW/Ø232	1572
N115LF CL3Ø/L T458 16 7Ø1 Ø1		↑ KSAF P2Ø3Ø		OTO 4ØØ	KSAF SAF V83 OTO TCS J13 BECON UT13 LMM SJD MMSD/Ø141	2167

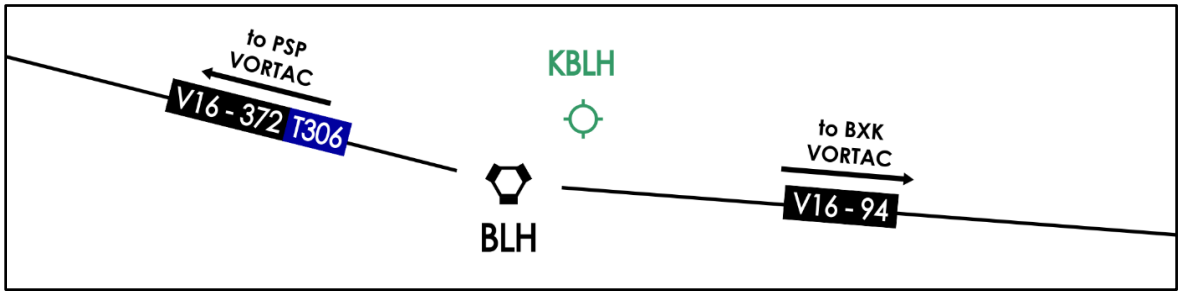
Time is 2023. What is the earliest time N115LF may be released? Explain your answer.

Answer: *N115LF cannot be released using the 44 or 22 knot rules.*

Explanation: *A slower aircraft may be released after a faster aircraft but there is no provision to release a faster aircraft in front of a slower en route aircraft using the 44 or 22 knot rule.*

PRACTICE EXERCISE 1: APPLYING 44 OR 22 KNOT SEPARATION *(CONT'D)*

4.

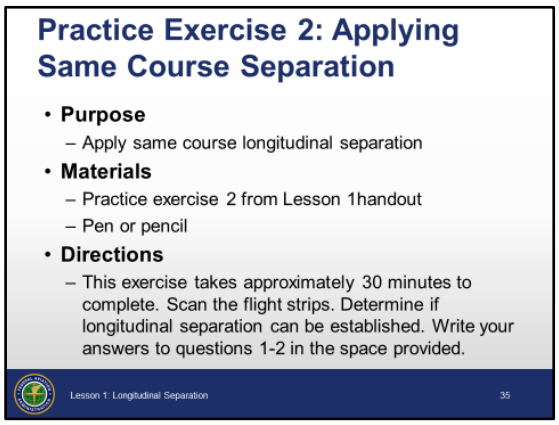


N72AZ PC12/L T244 G232 42 971 Ø4	BXK 1558	16 22 22 1622 BLH	8Ø✓	PSP	KPHX BXK V16 PSP KPSP/Ø1Ø9	1572
N323RB SR22/G T155 42 Ø91 Ø1		↑ KBLH P163Ø		PSP 8Ø	KBLH BLH V16 PSP V386 SOGGI APLES PMD V197 EHF COREZ AVE V107 PXN WINDY SMONE KLVK/Ø3Ø8	2167
N55ØBZ BE55/G T19Ø 16 7Ø1 Ø1		↑ KBLH P163Ø		PSP 8Ø	KBLH BLH V16 DODGR KEMT/ØØ45	1Ø25

Time is 1625. What is the most efficient order to release N323RB and N550BZ? Explain your answer.

Answer: *N72AZ has reported BLH. N550BZ is 54 knots slower and can depart now using 3 minute separation with the 44 knot rule.* ***Explanation:*** *N323RB is 35 knots slower than N550BZ. N323RB can depart 5 minutes after N550BZ departs using the 22 knot rule.*

PRACTICE EXERCISE 2: APPLYING SAME COURSE SEPARATION



Purpose

Apply same course longitudinal separation

Materials

Handout: *HO01_L01*

- Practice exercise 2 from Lesson 1 handout
- Pen or pencil

Directions

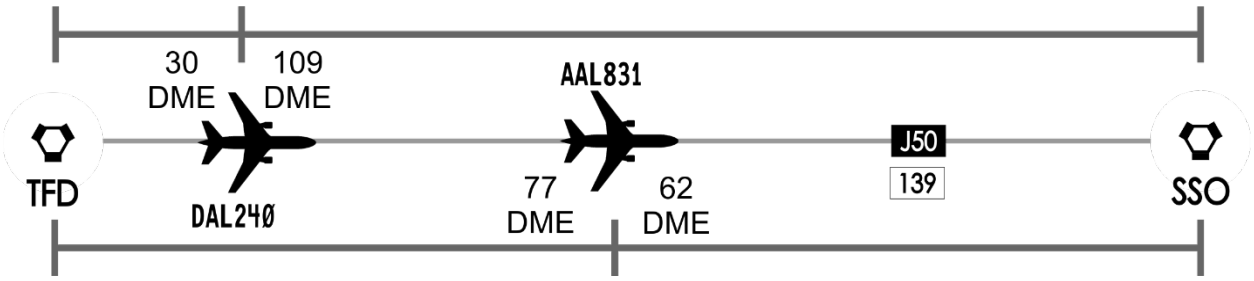
This exercise takes approximately 30 minutes to complete. Scan the flight strips. Determine if longitudinal separation can be established. Write your answers to questions 1-2 in the space provided.

Allow the students to complete each question and review the correct application of longitudinal separation before proceeding to the next example.

A map will show you aircraft positions for the student queries. PowerPoint slides are available for each flight strip depiction.

PRACTICE EXERCISE 2: APPLYING SAME COURSE SEPARATION *(CONT'D)*

1.



Use the map above to answer requests for DME reports. If there is no response, prompt the students about possible solutions. TFD VORTAC is "Stanfield" and SSO VORTAC is "San Simon."

DAL240 B738/L T448 G456 Ø2 226 Ø1	TFD Ø231	Ø2 49 49 SSO	37Ø✓	EWM	KLAX DOTSS2 CNERY BLH J169 TFD J5Ø SSO J4 INK GEEKY SOCKK3 KDFW	4111
AAL831 A319/L T458 G465 Ø2 226 Ø1	TFD Ø225	Ø2 43 43 SSO	35Ø✓	EWM	KLAX DOTSS2 CNERY BLH J169 TFD J5Ø SSO J4 INK GEEKY SOCKK3 KDFW	43Ø6

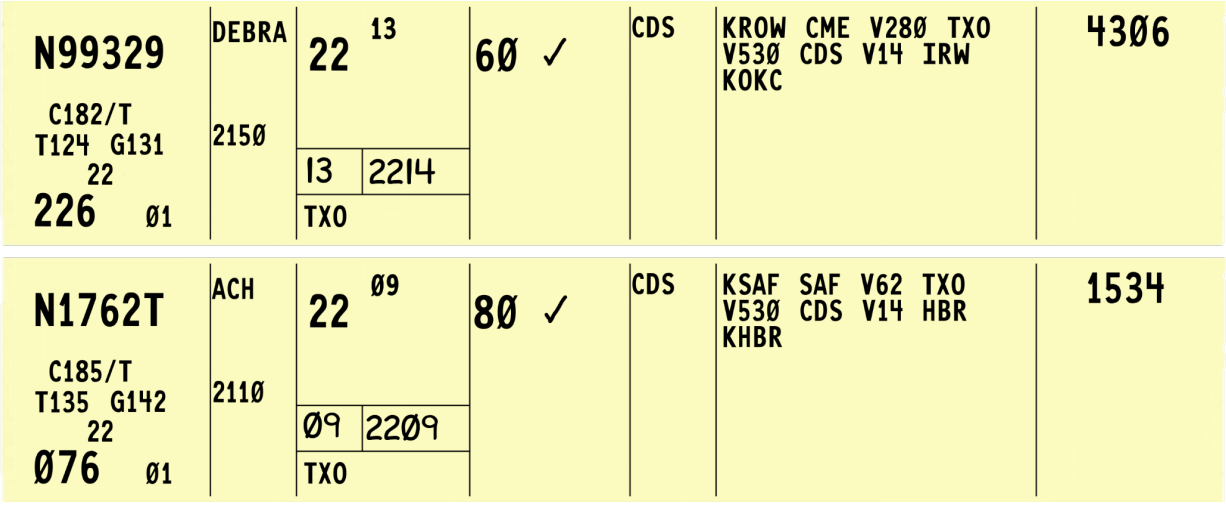
Time is 0235. DAL240 requests a descent to FL330. Indicate what steps you would use and the minima to apply in order to accommodate this request.

Answer: *Obtain DME reports to show more than 20 NM in-trail. Issue a descent to DAL240.*

Explanation: *Speeds are similar. The trailing aircraft is descending, 20 NM longitudinal separation is needed.*

PRACTICE EXERCISE 2: APPLYING SAME COURSE SEPARATION *(CONT'D)*

2.

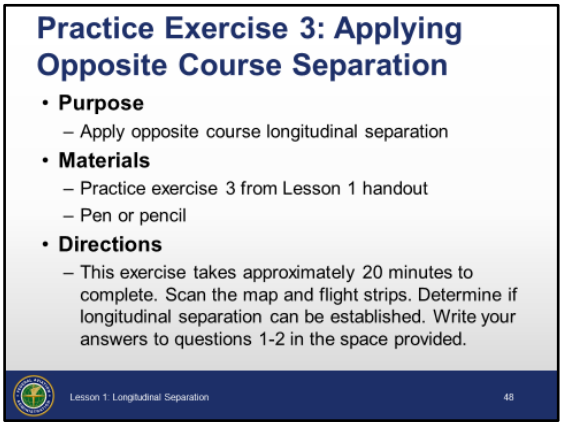


Time is 2221. N99329 is requesting a climb to 10,000'. Can you issue this clearance? Explain your answer.

Answer: *Yes.*

Explanation: *N99329 is the slower trailing aircraft climbing. The time is within 10 minute window for altitude changes. The aircraft are 5 minutes in-trail and within 4,000'.*

PRACTICE EXERCISE 3: APPLYING OPPOSITE COURSE SEPARATION



Purpose

Apply opposite course longitudinal separation

Materials

Handout: *HO01_L01*

- Practice exercise 3 from Lesson 1 handout
- Pen or pencil

Directions

This exercise takes approximately 20 minutes to complete. Scan the map and flight strips. Determine if longitudinal separation can be established. Write your answers to questions 1-2 in the space provided.

Allow the students to complete each question and review the correct application of longitudinal separation before proceeding to the next example.

A map will show you aircraft positions for the student queries. PowerPoint slides are available for each flight strip depiction.

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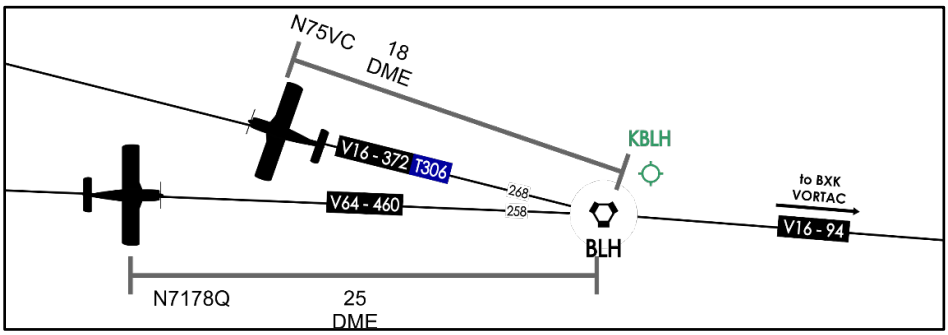
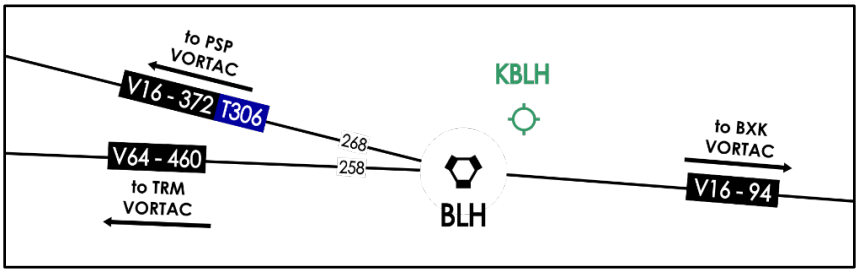
PRACTICE EXERCISE 3: APPLYING OPPOSITE COURSE SEPARATION *(CONT'D)*

1.



Use the map above to answer the question on the next.page about discontinuing vertical separation using DME reports. If there is no response, prompt the students about possible solutions. ***NOTE:*** *BLH VORTAC is "Blythe".*



N7178Q C172/G T130 G111 16 356 04	TRM 1002	10 48 ↓ 48 BLH	90✓		KTOA WILMA V64 BLH KBLH/1052	1572
N75VC SH36/A T185 16 079 01		↑ 1025/26 KBLH P1022	↑80 ~~60~~	PSP 80	KBLH BLH V16 DODGR KEMT/0049 CLV30	4366 D-A

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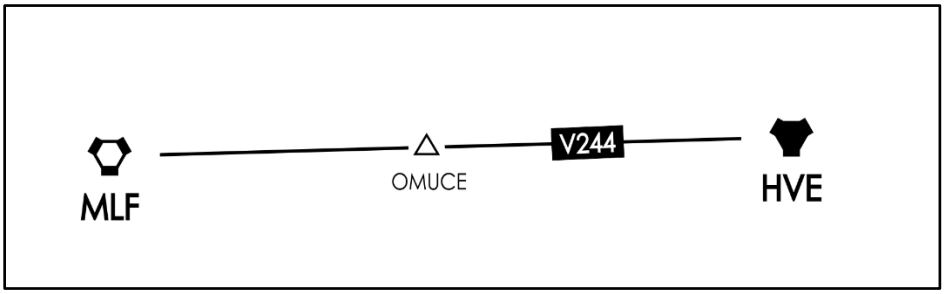
PRACTICE EXERCISE 3: APPLYING OPPOSITE COURSE SEPARATION *(CONT'D)*

Time is 1034. N7178Q requests lower. How can you provide separation?

Answer: *Ask N75VC to say DME from BLH (Blythe).* Clear N7178Q to maintain 9,000' until the DME mileage reported by N75VC.

Explanation: *The DME aircraft is below 10,000' so* DME/ATD slant range is not an issue. The aircraft have passed the same DME and vertical separation *can be discontinued.*

2.



N14HJ PC12/A T180 G194 23 773 04	HVE 0041	01 14 14 MLF	160✓	EWM	KGUC HBU V244 TPH KTPH/0221 RP OMUCE/58	1534
N161JW BE20/A T230 G215 23 226 03	TFD 0231	00 43 43 0043 MLF	170✓	HVE	KCDC V235 MLF V244 MTK KMTJ/0136 RP OMUCE/58	2654

Time is 0058. N161JW is requesting lower. Can you issue the clearance? Explain your answer.

Answer: *No.*

Explanation: *The aircraft are not 3 minutes apart. However, when 1 1/2 minutes has passed since the reports , a descent can be issued.*