



**Federal Aviation
Administration**

Initial En Route Qualification Training

Lesson 10 Board Management

Course 50148001

LESSON PLAN DATA SHEET

COURSE NAME: INITIAL EN ROUTE QUALIFICATION TRAINING

COURSE NUMBER: 50148001

LESSON TITLE: BOARD MANAGEMENT

DURATION: 6+30 HOURS

DATE REVISED: 2022-02
VERSION: V.2022-02

REFERENCE(S): FAA ORDER JO 7110.65, AIR TRAFFIC CONTROL

HANDOUT(S): brdmgmt.f2k - EXERCISE STRIPS AND BLANK STRIPS

**EXERCISE(S)/
ACTIVITY(S):** ACTIVITY 1: SORTING AND SEQUENCING FLIGHT STRIPS
ACTIVITY 2: DIRECTION ARROWS
ACTIVITY 3: DIRECTION ARROWS QUIZ
EXERCISE: STRIPMARKING

**END-OF-LESSON
TEST:** YES

**PERFORMANCE
TEST:** NONE

MATERIALS: NONE

**OTHER PERTINENT
INFORMATION:**

DISCLAIMER


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INTRODUCTION

Initial En Route Qualification Training

Lesson 10 Board Management

V.2022-02
Presented by
FAA Academy
Air Traffic Division
Training Branch



Federal Aviation
Administration



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Board management involves sequencing strips and scanning and correctly interpreting the traffic situation, which will allow you to begin planning control instructions. Using knowledge and skills from previous lessons, you will begin to recognize operational priorities and procedural preferences necessary to operate a safe and efficient sector.

INTRODUCTION *(Continued)*

BOARD MANAGEMENT



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Purpose

Board management includes techniques for sector management. You will learn to scan and sequence strips and to determine flight direction by reading the spaces on the flight progress strips. You will also learn how to plan in conjunction with stripmarking, avoid conflicts, determine priorities, and apply procedures.

INTRODUCTION *(Continued)*

Lesson Objectives

LESSON OBJECTIVES

- On an End-of-Lesson Test and in accordance with FAA Order JO 7110.65, you will identify:
 - Procedures for sequencing, scanning, and removing flight progress strips
 - Procedure for nonreceipt of a position report

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BOARD MANAGEMENT

Fix Designators



- ⦿ Arrange strips under the appropriate fix designator.
 - ⦿ Proposal strips are placed in the Suspense Bay (at ZAE, the Suspense Bay is above each bay header).
 - For multiple strips on proposals, the first strip is placed below the second strip.
 - Strips are sequenced according to P Time in Suspense Bay.
-

SEQUENCING FLIGHT STRIPS

Time Sequencing

TIME SEQUENCING						
N32V BE20/A T260 66 01	MCB 1001	14 10 ↓ MHZ	100	KJAN	KMCB V9 MHZ KJAN /1015	
RCH5124 H/C141/A T460 66 04	SQS 1003	13 10 ↓ MHZ	170	KJAN	KDAL V278 SQS V9 MHZ KJAN	
N20H C500/A T360 66 01	HEZ 0959	12 10 ↓ MHZ	150	ZAMMA	KMSY HEZ V245 IGB KUBS /1030	

- ⊙ Post strips in the appropriate low or high altitude sector according to altitude/flight level.
- ⊙ Sequence strips in:
 - Chronological order of arrival over posted fix (time sequencing)
 - Earliest at the bottom
 - If times are the same, sequence strips by altitude with lower altitudes below higher altitudes

SEQUENCING FLIGHT STRIPS (Continued)

Altitude Sequencing

ALTITUDE SEQUENCING

N210DC C210/A T190 66 02	HATER 0022 0021	00 33 MHZ	90✓ ↓ 80 ↓ 80	KJAN	KDAL./MLU V427 MHZ KJAN/0038 18NW	H ^{NW} 18 NW
N5JM BE65/A T190 66 03	GLH 0008	00 33 MHZ	70✓ 70	KJAN	KSTL./GLH V74 MHZ KJAN/0038 20NW	H ^{NW} 20 NW
AAL256 B733/A T450 66 01	HEZ 0022	00 31 MHZ	170✓ ↓ 60 X9SW@60 ↓ 60	KJAN	KAEX V245 MHZ KJAN 26SW RP 20NE HEZ/0025	H ^{NW} 26 SW

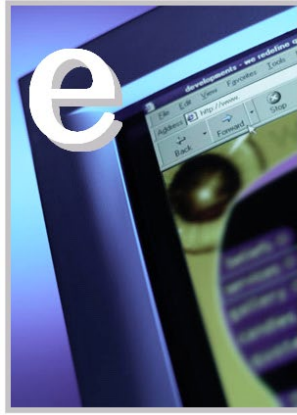
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- Ascending order of altitudes over posted fix (altitude sequencing)
 - Lowest on the bottom
 - Most often used in holding stacks

ACTIVITY 1: SORTING AND SEQUENCING FLIGHT STRIPS

Activity 1

SORTING AND SEQUENCING ACTIVITY



Purpose: to practice sorting and sequencing flight strips

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Description

In this activity, you will be presented with four sets of flight strips. You will need to arrange each flight strip in the correct bay and in the correct sequence within each bay. Feedback will be given immediately.

Directions

Access the IET eLearning menu. Select **Lesson 10 – Board Management**. Click **Sorting and Sequencing** activity.

Time Allotted

30 minutes

SCANNING FLIGHT STRIPS

Scanning Flight Strips



⦿ Scan flight progress strips for:

- Proper sequence
- Conflicts
- Inappropriate Altitude For Direction Of Flight (IAFDOF)
- Arrivals
- MEA violations
- Routing errors
- Coordination functions
- Type aircraft
 - Number of aircraft, if more than one
 - Category, if aircraft is heavy
- Non-DME
- Speed

SCANNING FLIGHT STRIPS *(Continued)*

Less-Than-Minimum Separation Situations

JO 7110.65,
par. 2-3-10,
fig. 2-3-8

WARNINGS						
N1194C C441/A T240 66 01	HEZ 1528	48	90 W W	ZAMMA	KAEX V245 IGB KBNA/1651	
		15				
		MHZ				
N143MH PA31/A T170 66 03	GLH 1521	44	90 W	MIZZE	KPBF V74 MHZ V11 GCV KMOB/1639	
		15				
		MHZ				

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⊙ Red W (warning) on a strip indicates:

- Less than 10 minutes at the same fix and altitude
- Aircraft conflict
- MEA/MOCA violation
- Warning/Prohibited Area violation

DIRECTION ARROWS

Opposite Direction

JO 7110.65,
par. 2-3-2

DIRECTION ARROWS – OPPOSITE DIRECTION									
N57R G159/A T290 66	MEI				STUEE	←			
		MHZ							
N67Y G159/A T290 66	STUEE					MEI	→		
		MHZ							

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☉ Use red direction arrows in space 23 to help determine:

- Opposite direction traffic
 - Previous fix (space 11) on one strip will be the same as next fix (space 21) on the other strip
 - Current fix (space 19) will usually be the same for both

DIRECTION ARROWS (Continued)

Same Direction

JO 7110.65,
par. 2-3-2

DIRECTION ARROWS – SAME DIRECTION						
N57R G159/A T290 66	HEZ			SQS		
				↑		
		MHZ				
N228T C421/A T210 66	HEZ			SQS		
				↑		
		MHZ				
N991W G159/A T290 66	STUEE			SQS		
				→↑		
		MHZ				

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- Same direction traffic
 - Previous fix (space 11) and next fix (space 21) will usually be the same on both strips

DIRECTION ARROWS (Continued)

Crossing/ Converging Traffic

JO 7110.65,
par. 2-3-2

DIRECTION ARROWS – CROSSING/CONVERGING TRAFFIC

The diagram illustrates the direction of traffic flow for two scenarios, N57R and N62GP, using a table format. The columns represent different pieces of information: aircraft identification, direction, and other details. Red arrows indicate the direction of traffic flow.

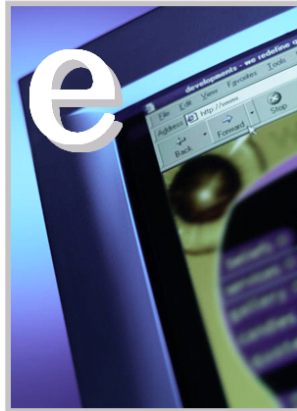
DIRECTION ARROWS – CROSSING/CONVERGING TRAFFIC					
N57R	MEI			GLH	
G159/A				↖	
T290					
66					
		MHZ			
N62GP	MIZZE			GLH	
BE35/A				↖	
T150					
66					
		MHZ			

- Crossing/converging traffic
 - Previous fix (space 11) will be different, and next fix (space 21) may be the same or different

ACTIVITY 2: DIRECTION ARROWS

Activity 2

DIRECTION ARROWS ACTIVITY



Purpose: to practice using direction arrows on flight strips to identify conflictions

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Description

In this activity, you will be presented with seven sets of flight strips. Each set will mimic a bay in which the flight strips have already been sequenced and sorted. You will also be presented with a set of direction arrows. You will need to drag and drop the correct direction arrow to the correct location on each flight strip.

Directions

Access the IET eLearning menu. Select **Lesson 10 – Board Management**. Click **Direction Arrows** activity.

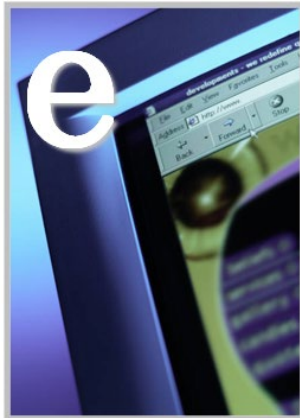
Time Allotted

15 minutes

ACTIVITY 3: DIRECTION ARROWS QUIZ

Activity 3

DIRECTION ARROWS QUIZ



Purpose: to test your knowledge of direction arrows

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Description

In this activity, you will apply your map knowledge and test your ability to place the correct direction arrows on flight progress strips. You will be given a total of 10 flight strips, which display one at a time. Along with each flight strip, you are given a table containing various direction arrows. You **must** click the correct direction arrow that applies to the given flight strip.

Directions

Access the IET eLearning menu. Select **Lesson 10 – Board Management**. Click **Direction Arrows Quiz** activity.

Time Allotted

10 minutes

SECTOR MANAGEMENT

Solutions to Traffic

- ⊙ Determine different solutions to traffic situations.
 - Analyze the situation to determine alternative solutions based on:
 - Pilot's request
 - Other controller's request
 - Operational priorities
 - Operational advantage

NOTE: Solutions to traffic situations are taught in later lessons.

Removing Flight Progress Strips

JO 7110.65,
par. 2-3-1

- ⊙ Remove flight progress strips when they are **no** longer required for control purposes.
-

Nonreceipt of Position Report

JO 7110.65,
par. 6-1-2

- ⊙ Take action to obtain a position report affecting separation **no** later than 5 minutes after the aircraft is estimated over the fix.
-

SECTOR MANAGEMENT *(Continued)*

Taking Control of a Sector

- ⦿ Follow this suggested checklist when preplanning a problem or taking control of a sector:

PRE-PLANNING CHECKLIST	
✓	Stuff and sequence strips.
✓	Check for TUX aircraft.
✓	Check altitude if on frequency.
✓	Mark directions arrows.
✓	Check for IAFDOF.
✓	Mark all conflicts with red Ws.
✓	Resolve conflictions.
✓	Plan all arrival restrictions.
✓	Establish priorities.

EXERCISE: STRIPMARKING

Exercise, Part 1

STRIPMARKING EXERCISE, PART 1



Purpose: to practice marking flight progress strips

Directions: set up bays and bay headers; mark provided strips based on scripts read aloud by instructor

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Directions

This exercise is in three parts. In each part, your instructor will read the script of traffic situations. You will use bay headers for D66 (Magnolia), set up bays, and do the necessary stripmarking on the strips provided. At the end of each part, your instructor will stop and discuss your answers. If necessary, the instructor may stop the clock midway through a part in order to answer questions that may arise.

Continued on next page

EXERCISE: STRIPMARKING *(Continued)*

Part 1 Strips

N777Z C337/A T170 66 01	MLU	20 00 KVKS P0025	80	MLU	KVKS MLU V71 KELD/0120	
VKS						
N210DC C210/A T190 66 01	MLU 0007	20 00 HATER	80	MHZ	KDAL MLU V427 MHZ V18 KMEI/0055	
N5103B BE99/A T220 66 01	MLU 0000	16 00 DORTS	50	VKS 0019	KDAL MLU V417 DORTS VKS KVKS/0019	

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Continued on next page

EXERCISE: STRIPMARKING *(Continued)*

Part 1 Strips (Cont'd)

SWA230 B733/A T450 66 01		<div>↑</div>		HLI 150	KGWO SQS V11 DYR KSTL	
SQS						
N23GT C310/G T190 66 03	GLH 0014	<div>↓</div>	32 00 90	KGWO 0037	KLIT GLH V278 SQS KGWO/0037	
SQS						
DAL311 DC9/A T450 66 03	UJM 0021		31 00 110	MHZ	KMEM V9 MHZ KJAN	
SQS						

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Continued on next page

Exercise, Part 2

Directions: set up bays and bay headers; mark provided strips based on scripts read aloud by instructor

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N777Z C337/A T170 66 01				MLU	KVKS MLU V71 KELD/0120		
							KVKS P0025
				80			

N210DC C210/A T190 66 01	MLU 0007	20	80 90✓	MHZ	KDAL MLU V427 MHZ V18 KMEI/0055	
		00				
		20				
		HATER				

N5103B BE99/A T220 66 01	MLU 0000	16 00			50 ✓ 31 50/31SE MLU	VKS 0019	KDAL MLU V417 DORTS VKS KVKs/0019 C	APCH 0011
		16	0016					
		DORTS						

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EXERCISE: STRIPMARKING (Continued)

Part 2 Strips (Cont'd)

MHZ							
N56Q BE65/A T165 66 03	GLH 0022	00 <u>48</u> ↓ MHZ	170 ↓80	KJAN	KSTL./GLH V74 MHZ KJAN/0052		20NW
DAL311 DC9/A T450 66 04	SQS 0031	00 <u>41</u> ↓ MHZ	110 X9NW @ 70 ↓70	KJAN	KMEM V9 MHZ KJAN		17NW/V9
N210DC C210/A T190 66 02	HATER 0020	00 36 ↓ MHZ	88 90 ✓	MEI	KDAL MLU V427 MHZ V18 KMEI/0055		
AAL290 B733/A T450 66 01	HEZ 0022	00 <u>33</u> ↓ MHZ	170 170/20NE HEZ X9SW@60 ↓60	KJAN	KAEX V245 MHZ KJAN		26SW
R18522 T34P/P T190 66 01	EDC 0020	↑ 0012/ KJAN P0012	↑140 X17NE MHZ ↓50 X17SE SQS ↑120	SQS 140	KJAN MHZ V9 KMEM V555 SQS		D-A

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EXERCISE: STRIPMARKING (Continued)

Part 2 Strips (Cont'd)

SWA230 B733/A T450 66 01		<div style="text-align: center;">↑</div>		HLI	KGWO SQS V11 DYR KSTL	
		KGWO P0024		150W		
SQS						
N23GT C310/G T190 66 03	GLH 0014	<div style="text-align: center;">↓</div>	32 00	90	KGWO 0037	KLIT GLH V278 SQS KGWO/0037
		SQS				
DAL311 DC9/A T450 66 03	UJM 0021	<div style="text-align: center;">↓</div>	31 00	110	MHZ	KMEM V9 MHZ KJAN
		SQS				
R18522 T34P/P T190 66 02	KJAN P0012 +15	<div style="text-align: center;">27</div>	<div style="text-align: center;"> ↑140 X17 SE ↑120 </div>	<div style="text-align: center;"> ↑140 </div>	UJM	<div style="text-align: center;"> KJAN MHZ V9 KMEM V555 SQS </div>
		SQS		140		

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EXERCISE: STRIPMARKING (Continued)

Exercise, Part 3

STRIPMARKING EXERCISE, PART 3



Purpose: to practice marking flight progress strips

Directions: set up bays and bay headers; mark provided strips based on scripts read aloud by instructor

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Part 3 Strips

VKS

N210DC C210/A T190 66 01	MLU 0007	20 00 20 0019 HATER	80 90✓	MHZ 0034	KDAL MLU V427 MHZ V18 KMEI/0055	
N5103B BE99/A T220 66 01	MLU 0000	16 00 € 0018 16 0016 DORTS	50✓ 50/31SE MLU	VKS 0019	KDAL MLU V417 DORTS VKS KVKS/0019	APCH 0011
N777Z C337/A T170 66 01	EDC 0027	↑ KVKS P0025		MLU 80	KVKS MLU V71 KELD/0120	

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Continued on next page

EXERCISE: STRIPMARKING (Continued)

Part 3 Strips (Cont'd)

MHZ							
N56Q BE65/A T165 66 03	GLH 0022	00 <u>48</u> ↓	170	KJAN	KSTL/.GLH V74 MHZ KJAN/0052		20NW
		MHZ	<u>↓80</u>				
DAL311 DC9/A T450 66 04	SQS 0031	00 <u>41</u> ↓	110	KJAN	KMEM V9 MHZ KJAN		17NW/V9
		MHZ	<u>X9NW @ 70</u> <u>↓70</u>				
N210DC C210/A T190 66 02	HATER 0020	36 00 34 MHZ	80 <u>90</u> ✓	MEI	KDAL MLU V427 MHZ V18 KMEI/0055		
AAL290 B733/A T450 66 01	HEZ 0022	00 <u>33</u> ↓	170✓ <u>↓60</u> <u>170/20NE HEZ</u> <u>X9SW@60</u> <u>↓60</u>	KJAN	KAEX V245 MHZ KJAN	C 26 SW	H ^{NW} 26SW
R18522 T34P/P T190 66 01	EDC 0020	0012/0015 KJAN P0012	↑140 <u>X17NE MHZ</u> <u>↓50</u> <u>X17SE SQS</u> <u>↑120</u>	SQS 0030 140	KJAN MHZ V9 KMEM <u>V555 SQS</u>		D-A

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EXERCISE: STRIPMARKING (Continued)

Part 3 Strips (Cont'd)

SQS							
N23GT C310/G T190 66 03	GLH 0014	32 00 32 SQS	↓ 90✓ ↓ 70 90/13NW X@70	KGWO 0037	KLIT GLH V278 SQS KGWO/0037 67 ± 70	VR H _{SW} 256 LT 0042	
DAL311 DC9/A T450 66 03	UJM 0021	31 00 SQS	110	MHZ	KMEM V9 MHZ KJAN		
R18522 T34P/P T190 66 02	KJAN P0012 +15	27 00 30 SQS	↑140 X17 SE ↑120 ↑140	UJM 140	KJAN MHZ V9 KMEM V555 SQS		
SWA230 B733/A T450 66 01	EDC 0025 KGWO P0024	↑ 0024/	↑150 X11NE SQS ± 60 ↑150	HLI 150 W	KGWO SQS V11 DYR KSTL V535 HLI	D-A	

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Continued on next page

EXERCISE: STRIPMARKING (Continued)

Final Answers

FINAL ANSWERS



Purpose: to practice marking flight progress strips

Directions: set up bays and bay headers; mark provided strips based on scripts read aloud by instructor

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Final Answers Strips

VKS

N777Z		T→NE TL 330/⇒ V417	↑80	MLU 0057	KVKS, MLU V71 KELD/0120	
C337/A		V<0035(40)	X31SE MLU ↑70		(V417)	D-A
T170					16 SE MLU	
66	EDC	0025/0028	↑80	80		ZFW
01	0027	KVKS P0025				

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EXERCISE: STRIPMARKING (Continued)

Final Answers
Strips
(Cont'd)

MHZ							
N56Q BE65/A T165 66 03	GLH 0022	00	48	170 ✓ ↓ 80 170/26SE GLH ↓ 80	KJAN	KSTL./GLH V74 MHZ KJAN/0052	H ^{NW} 20NW
DAL311 DC9/A T450 66 04	SQS 0031	00	41	110 ✓ ↓ 70 X9NW@ 70 ↓ 70	KJAN	KMEM V9 MHZ KJAN	H ^{NW} 17NW/V9
N210DC C210/A T190 66 02	HATER 0020	36 00	34 0035 MHZ	80 90 ✓	MEI 0056	KDAL MLU V427 MHZ V18 KMEI/0055	12 SE

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EXERCISE: STRIPMARKING (Continued)

Final Answers
Strips
(Cont'd)

SQS							
N23GT C310/G T190 66 03	GLH 0014	32 00 32 0032 SQS	↓ 90/13NW X@70	KGWO 0037	KLIT GLH V278 SQS KGWO/0037 67 ↓ 70	VR H 256 0042 LT VR 0032	
DAL311 DC9/A T450 66 03	UJM 0021	31 00 31 0031 SQS	110 ✓ ↓ 70 110/24NW X5SE ↑ 100	MHZ 0041	KMEM V9 MHZ KJAN		
R18522 T34P/P T190 66 02	KJAN P0012 +15	27 00 30 0030 SQS	↑ 140 X17 SE ↑ 120 ↑ 140	UJM 0053 140	KJAN MHZ V9 KMEM V555 SQS 24 NW		
SWA230 B733/A T450 66 01	EDC 0025	↑ 0024/0024 KGWO P0024	↑ 150 X11NE SQS ↓ 60 ↑ 150	HLI 0039 150 W	KGWO SQS V11 DYR KSTL V535 HLI 23 NE SQS RP 8NE SQS/0029	D-A	

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IN CONCLUSION

Lesson Review

LESSON REVIEW

The following topics were covered in this lesson:

- Sequencing of flight strips
- Scanning of flight strips
- Direction arrows
- Sector Management

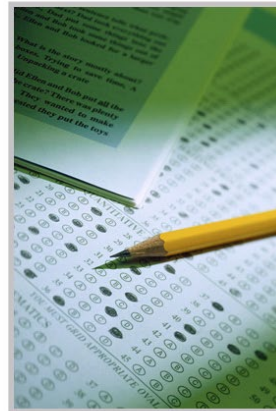


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End-of-Lesson Test

END-OF-LESSON TEST

Board Management



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