



BOSTON ARTCC (vZBW) TRAINING SYLLABUS

LEVEL: Center Controller (C1)

“I have lots more to do, a lot more to keep track of, so I’ll do it right the first time and won’t suck at it.” (vZBW Center Controller’s Creed)

RELEASE RECORD

Version	Date	Author	Notes
1.0	02 Jan 2008	EE	Initial Release
1.1	01 Feb 2009	DO	General/Maintenance update, added exam request links
2.0	01 Aug 2009	DO	Incorporates changes made as a result of VATSIM GRP 2.0, updates all links
2.1	01 Mar 2010	DO	Updated links, added references/links to new KBOS and A90 SOPs, updated document to reference new KBOS RNAV Departure Procedures, updates VATUSA reference information, authorizes the assignment of Off-Peak Center/Enroute privileges once basic VATUSA ratings guidelines are met.
2.11	19 Jun 2014	BN	Updated links, minor changes to FAA document titles

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Introduction

Welcome to Center / Enroute control!

As you look through the Center Controller (C1) Syllabus, you may think that many sections and materials are repeated from the Approach Controller (S3) syllabus. You would be absolutely correct. Now, rather than just working one TRACON, responsible for 3 or 4 airports, you're responsible for a lot more. From Fulton (FZY), to Frenchville (FVE), to Nantucket (ACK), you are now responsible for 12 TRACONS, and all the underlying controlled airspace. Being able to apply the fundamentals of TRACON control, without having to think about it, becomes ever more critical to your success as a Center controller.

Although you'll often have an approach controller or two in which you can delegate their respective airspace, you will undoubtedly often find yourself without any other controllers, and responsible for the entire show. This is why the vast majority of the Center Syllabus builds and expands upon what you learned during your S3 training.

With the exception of a few new items, the biggest portion of your Center training will revolve around utilizing the skills you've already learned, applying them to more complex traffic problems and formulating working solutions. You'll learn how to rapidly locate, interpret, and apply a wide array of information based upon weather, traffic levels, and pilot requests/competency. Additionally you'll learn how to apply new tools to expedite traffic and reduce your overall workload.

Unlike working a single TRACON, the sheer amount of airspace you are responsible for can be intimidating at times. From having only 1 lone transient IFR aircraft, to dozens with multiple aircraft on approach into Syracuse, Bangor, Burlington, Boston, Bradley, and Nantucket, all at the same time, with multiple departures out of other fields, Center is the only position that can swing from one extreme of traffic levels to the other in a virtual "blink of an eye".

As any experienced Center controller will tell you, success is all about planning ahead, and improvising your plan based upon the unexpected. Always expect the unexpected, be able to adapt, and you'll find that the Center position will often run like clockwork, and be the most rewarding position you will ever work.

As always, if you have any questions, please feel free to ask the training staff. We're here to assist you along the way. Again, welcome to Center!

Regards,

Rich Bonneau (BU)
Air Traffic Manager
Boston ARTCC (vZBW)

1 Center/Enroute Control Fundamentals

1.1 SOP Review

- 1.1.1 [ZBW Center SOP](#)
- 1.1.2 [A90 TRACON SOP](#)
- 1.1.3 [K90 TRACON SOP](#)
- 1.1.4 [G90 TRACON SOP](#)
- 1.1.5 [Y90 TRACON SOP](#)

1.2 ATC Phraseology

- 1.2.1 [FAA Pilot / Controller Glossary](#)

1.3 Airspace Overview

- 1.3.1 [vZBW TRACONs](#)
- 1.3.2 Prohibited/Restricted/Warning Areas
 - 1.3.2.1 [SkyVector - New York & Halifax Sectionals](#)
 - 1.3.2.2 [14 CFR 73.81-85 - Prohibited Areas](#)
 - 1.3.2.3 [14 CFR 73.11-19 - Restricted Areas](#)
 - 1.3.2.4 [FAA Special Use Airspace \(SUA\) Database](#)
 - 1.3.2.5 [AIM Chapter 3-4: Special Use Airspace](#)
- 1.3.3 Military Operations Areas
 - 1.3.3.1 [SkyVector - New York & Halifax Sectionals](#)

1.4 Interfacility Letters of Agreement (LOA)

- 1.4.1 Cleveland: [ZBW / ZOB Letter of Agreement](#)
- 1.4.2 Montreal: [ZBW / YUL Letter of Agreement](#)
- 1.4.3 New York: [ZBW / ZNY Letter of Agreement](#)
- 1.4.4 Washington: [ZBW / ZDC Letter of Agreement](#)

1.5 Military Aircraft Procedures

- 1.5.1 [FAAO 7110.65 2-1-12: Military Procedures](#)
- 1.5.2 [VATUSA Military Operations Training Guide](#)

1.6 *Radar Identification / Verification*

- 1.6.1 [FAAO 7110.65 5-3-2: Primary Radar Identification Methods](#)
- 1.6.1 [FAAO 7110.65 5-3-3: Beacon Identification Methods](#)
- 1.6.2 [FAAO 7110.65 5-2-17: Validation of Mode C Readout](#)
- 1.6.3 [FAAO 7110.65 5-2-18: Altitude Confirmation - Mode C](#)
- 1.6.4 [FAAO 7110.65 5-2-9: VFR Code Assignments](#)

1.7 *Transfer of Control / Pointouts*

- 1.7.1 [FAAO 7110.65 5-4-2: Terms](#)
- 1.7.2 [FAAO 7110.65 5-4-3: Methods](#)
- 1.7.1 [VRC Documentation](#) or [ASRC Documentation](#)
- 1.7.2 [FAAO 7110.65 2-1-17: Radio Communication Transfer](#)
- 1.7.3 [FAAO 7110.65 5-4-7: Point Out](#)

2 *Departure Procedures*

2.1 *Ground Stops*

- 2.1.1 [FAAO 7110.65 4-3-5: Ground Stops](#)
- 2.1.2 [FAAO 7110.65 4-4-6: Direct Clearances](#)

2.2 *Departure Clearances*

- 2.2.1 [FAAO 7110.65 4-3-2: Departure Clearances](#)

2.3 *Types of Departure Procedures*

- 2.3.1 [Introduction to IAP Symbols](#)
- 2.3.2 [Terminal Procedures Publication Symbols](#)
- 2.3.3 [FAA-H-8261-1A Chapter 2: Takeoffs and Departures](#)
- 2.3.4 Vectored
 - Example: [ALBANY THREE DEPARTURE](#)
- 2.3.5 Pilot NAV
 - Example: [WHITE RIVER ONE DEPARTURE](#)
- 2.3.6 RNAV
 - Example: [STEWY ONE DEPARTURE \(RNAV\)](#)
- 2.3.7 Obstacle
 - Example: [TAKE-OFF MINIMUMS AND \(OBSTACLE\) DEPARTURE PROCEDURES](#)

2.4 *VFR Operations*

- 2.4.1 [ZBW VFR Tutorial](#)
- 2.4.2 [FAAO 7110.65 7-6: Basic Radar Service to VFR Aircraft - Terminal](#)
- 2.4.3 [FAAO 7110.65 5-5-10: Adjacent Airspace](#)
- 2.4.4 [FAAO 7110.65 7-9: Class B Service Area - Terminal](#)
- 2.4.5 [AIM Chapter 3-2-3: Class B Airspace](#)
- 2.4.6 [FAAO 7110.65 7-8: Class C Service - Terminal](#)
- 2.4.7 [AIM Chapter 3-2-4: Class C Airspace](#)
- 2.4.8 [FAAO 7110.65 7-5: Special VFR \(SVFR\)](#)
- 2.4.9 [FAAO 7110.65 7-6: Basic Radar Service to VFR Aircraft- Terminal](#)
- 2.4.10 [FAAO 7110.65 7-1: Visual, General](#)
- 2.4.11 [SkyVector](#)

2.5 *Nontowered Airports*

- 2.5.1 [FAAO 7110.65 4-3-4: Departure Restrictions, Clearance Void Times, Hold for Release, and Release Times](#)
- 2.5.2 [AIM Chapter 5-2-6: Departure Restrictions, Clearance Void Times, Hold for Release, and Release Times](#)
- 2.5.3 [ZBW IFR Operations at Nontowered Airports Tutorial](#)

2.6 *Handoffs*

- 2.6.1 [FAAO 7110.65 2-1-17: Radio Communication Transfer](#)

3 Enroute Procedures

3.1 Altimeter Issuance

- 3.1.1 [FAAO 7110.65 2-7-2: Altimeter Setting Issuance Below Lowest Usable FL](#)

3.2 Holding

- 3.2.1 [FAAO 7110.65 4-6: Holding Aircraft](#)
- 3.2.2 [AIM Chapter 5-3-7: Holding](#)

3.3 Review of airway/routing structures

- 3.3.1 [FAAO 7400.9: Airspace Designations and Reporting Points](#)
- 3.3.2 [AIM Chapter 5-3-4: Airways and Route System](#)
- 3.3.3 [SkyVector - Enroute Low and High Altitude IFR Charts](#)
- 3.3.4 [ZBW Center Sector File](#)

3.4 Instrument Approach Procedures (IAP)

- 3.4.1 [AIM Chapter 5-4-5: Instrument Approach Procedure Charts](#)
- 3.4.2 [FAA-H-8261-1A Chapter 5: Approach](#)

3.5 Radar Separation

- 3.5.1 [FAAO 7110.65 5-5-1: Application](#)
- 3.5.2 [FAAO 7110.65 5-5-4: Minima](#)
- 3.5.3 [FAAO 7110.65 4-5-1: Vertical Separation Minima](#)

3.6 In-Trail Requirements

- 3.6.1 ZBW SOP
- 3.6.2 Letters of Agreement
 - 3.6.2.1 Cleveland: [ZBW / ZOB Letter of Agreement](#)
 - 3.6.2.2 Montreal: [ZBW / YUL Letter of Agreement](#)
 - 3.6.2.3 New York: [ZBW / ZNY Letter of Agreement](#)
 - 3.6.2.4 Washington: [ZBW / ZDC Letter of Agreement](#)
- 3.6.3 [FAAO 7110.65 5-7: Speed Adjustment](#)

3.7 VFR On Top

- 3.7.1 [FAAO 7110.65 7-3-1: VFR-on-top](#)
- 3.7.2 [AIM Chapter 5-5-13: VFR-on-top](#)

3.8 Descent Profiles

- 3.8.1 [FAAO 7110.65 4-5-7: Altitude Information](#)
- 3.8.2 [FAAO 7110.65 4-7-2: Advance Descent Clearance](#)
- 3.8.3 [FAAO 7110.65 4-7-5: Military Turbojet Enroute Descent](#)

4 Arrival Procedures

4.1 Approach Information

- 4.1.1 [FAAO 7110.65 4-7-10: Approach Information](#)

4.2 Standard Terminal Arrival Route (STAR)

- 4.2.1 [AIM Chapter 5-4-1: Standard Terminal Arrival \(STAR\), Area Navigation \(RNAV\) STAR, and Flight Management System Procedures \(FMSP\) for Arrivals](#)
- 4.2.2 [FAA-H-8261-1A Chapter 4: Arrivals](#)

4.3 Review of STAR Charts

- 4.3.1 STAR
 - Example: [STELA ONE ARRIVAL](#)
- 4.3.2 RNAV STAR
 - Example: [DEEPO ONE ARRIVAL \(RNAV\)](#)

4.4 Instrument Approach Procedures (IAP)

- 4.4.1 [AIM Chapter 5-4-5: Instrument Approach Procedure Charts](#)
- 4.4.2 [FAA-H-8261-1A Chapter 5: Approach](#)

4.5 Review of Approaches

- 4.5.1 Precision Approaches
 - Example: [ILS RWY 15 \(BGR\)](#)
- 4.5.2 Non-Precision Approach
 - Example: [LOC RWY 26 \(PSF\)](#)
- 4.5.3 Charted Visual Approach
 - 4.5.3.1 [FAAO 7110.65 7-4-5: Charted Visual Flight procedures \(CVFP\)](#)
 - Example: [HARBOR VISUAL RWY 29 \(PWM\)](#)
- 4.5.4 RNAV Approach
 - Example: [RNAV \(GPS\) RWY 28 \(PQI\)](#)
- 4.5.5 Visual Approach
 - 4.5.5.1 [FAAO 7110.65 7-4-1: Visual Approach](#)

4.6 Approach Vectoring

- 4.6.1 FAAO 7110.65 5-9-1: Vectors to Final Approach Course
- 4.6.2 FAAO 7110.65 5-9-2: Final Approach Course Interception
- 4.6.3 FAAO 7110.65 5-9-3: Vectors Across Final Approach Course
- 4.6.4 FAAO 7110.65 5-9-4: Arrival Instructions
- 4.6.5 FAAO 7110.65 4-8-1: Approach Clearance
- 4.6.6 FAAO 7110.65 4-7-2: Vectors for Visual Approach
- 4.6.7 FAAO 7110.65 7-4-3: Clearance For Visual Approach

4.7 Holding

- 4.7.1 FAAO 7110.65 4-6: Holding Aircraft
- 4.7.2 AIM Chapter 5-3-8: Holding
- 4.7.3 FAA-H-8261-1A Chapter 3: En Route Operations

4.8 Handoffs

- 4.8.1 FAAO [7110.65 2-1-17: Radio Communication Transfer](#)

4.9 Missed Approach Procedures

- 4.9.1 FAAO 7110.65 4-8-9: Missed Approach
- 4.9.2 AIM Chapter 5-4-21: Missed Approach

4.10 TRACON Handoff Locations

4.10.1 SOPs

- 4.10.1.1 [A90 TRACON SOP](#)
- 4.10.1.2 [K90 TRACON SOP](#)
- 4.10.1.3 [G90 TRACON SOP](#)
- 4.10.1.4 [Y90 TRACON SOP](#)

4.10.2 Letters of Agreement

- 4.10.2.1 Cleveland: [ZBW / ZOB Letter of Agreement](#)
- 4.10.2.2 Montreal: [ZBW / YUL Letter of Agreement](#)
- 4.10.2.3 New York: [ZBW / ZNY Letter of Agreement](#)
- 4.10.2.4 Washington: [ZBW / ZDC Letter of Agreement](#)

4.11 Cruise Clearances

- 4.11.1 [FAAO 7110.65 4-5-7: Altitude Information](#)
- 4.11.2 [FAAO 7110.65 5-5-6: Exceptions \(Radar Separation\)](#)

4.12 Nontowered Airport Procedures

4.12.1 [FAAO 7110.65 4-8-8: Communications Release](#)

4.12.2 [ZBW IFR Operations at Uncontrolled Airports Tutorial](#)

4.13 Full Instrument Approach (Nonradar Approach)

4.13.1 [AIM Chapter 5-4-9: Procedure Turn](#)

4.13.2 [FAAO 7110.65 4-8-1: Approach Clearance](#)

4.13.3 Procedure Turn

- Example: [LOC RWY 26 \(PSF\)](#)

4.13.4 Hold In-Lieu-Of a Procedure Turn

- Example: [ILS RWY 24 \(ACK\)](#)

4.13.5 NoPT (Procedure Turn Not Authorized)

- Example: [RNAV RWY 4 \(BHB\)](#)

4.13.6 DME Arc

- Example: [VOR/DME RWY 17 \(AUG\)](#)

When you have reviewed the previous sections and are comfortable with the information you have been provided, you may: [**Request the ZBW Center / Enroute exam here**](#)

Upon passing, including successful completion of exam corrections, you will begin training with a mentor online or in the sweatbox until basic competency to the [VATUSA Rating Guidelines](#) for the C1 Rating is achieved.

Once basic competency is demonstrated you will be assigned the **VATUSA Center/Enroute Control (C1) exam.**

- *VATUSA References*
 - [VATUSA Training Resource Center](#)
 - [VATUSA C1 Training Page](#)
 - [VATUSA C1 Advanced Topics](#)

Note: In the event of a discrepancy between the above VATUSA training material, and that material taught at ZBW, the material taught locally (ZBW) will take precedence.

Upon passing, including successful completion of exam corrections, you may be promoted to the rank of Center/Enroute Controller (C1).

Upon successful demonstration of competence to the [VATUSA Rating Guidelines](#) for the C1 Rating, and with the endorsement of an instructor, you may be granted authorization to work Boston Center positions during off peak hours (per the vZBW Position Restrictions Policy).

NOTE: This does not mean that you have achieved full Center/Enroute certification, and does not mean you are authorized to work at Boston Center during Peak Times.

5 Advanced Enroute Control

5.1 TCAS Procedures

- 5.1.1 [FAAO 7110.65 2-1-27: TCAS Resolution Advisories](#)
- 5.1.2 [AIM Chapter 4-4-16: Traffic Alert and Collision Avoidance System \(TCAS I & II\)](#)

5.2 Emergencies

- 5.2.1 [VATUSA General Division Policy](#)
- 5.2.2 [FAAO 7110.65 10-2: Emergency Assistance](#)
- 5.2.3 [VATSIM Code of Conduct - Paragraph \(b\)8: Pilot's Conduct](#)

You will then continue training with an instructor until full competency is demonstrated during an Over The Shoulder (OTS) exam.

Upon passing, you may be awarded your full Center/Enroute certification.