Federal Aviation
Administration

Initial En Route Qualification Training

Instructor
Lesson 46
Computer Equipment and Message Entry, Part 2

Course 50148001

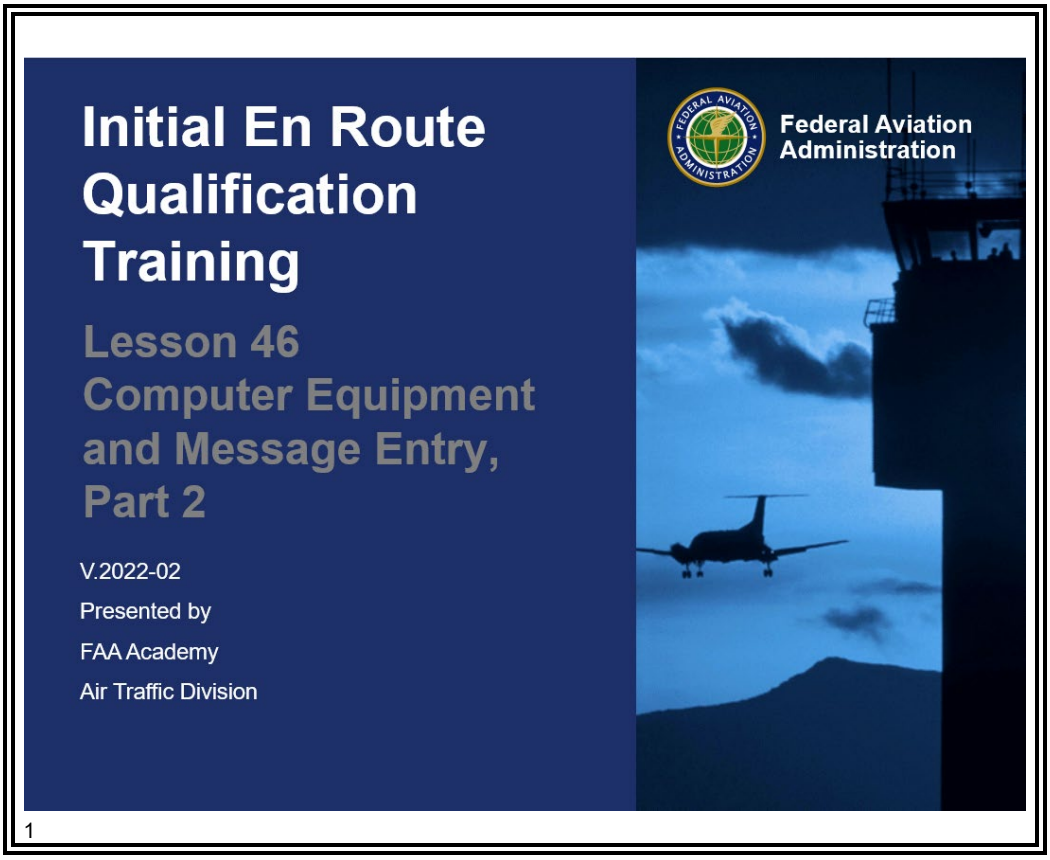
LESSON PLAN DATA SHEET

COURSE NAME:	INITIAL EN ROUTE QUALIFICATION TRAINING
COURSE NUMBER:	50148001
LESSON TITLE:	COMPUTER EQUIPMENT AND MESSAGE ENTRY
DURATION:	12+30 HOURS
DATE REVISED:	2022-02
VERSION:	V.2022-02
REFERENCE(S):	FAA ORDER JO 7110.65, AIR TRAFFIC CONTROL; TI6110.101, RADAR-ASSOCIATE POSITION USER MANUAL; TI6110.100, RADAR POSITION USER MANUAL
HANDOUT(S):	APPENDIX A: ABBREVIATIONS AND CONTROL SYMBOLS APPENDIX B: LAB QUICK REFERENCE GUIDE (In Student Lesson)
EXERCISE(S)/ ACTIVITY(S):	ERAM CBIs, SETS 3 & 4; MESSAGE PRACTICE 4
END-OF-LESSON TEST:	NONE
PERFORMANCE TEST:	NONE
MATERIALS:	NONE
OTHER PERTINENT INFORMATION:	NONE

☞ ***NOTE:*** *As you prepare for this lesson, recall and be prepared to talk about examples and personal experiences that illustrate or explain the teaching points in the lesson.*

INTRODUCTION

Gain Attention



In the course so far, you have learned to separate aircraft using non-automated procedures. Additionally, in Computer Equipment and Message Entry, Part 1 you learned basic computer commands which allow you to maintain current flight plan information and exchange data electronically with various ATC entities (towers, flight service stations, approach controls and other ARTCCs).

INTRODUCTION *(Continued)*

Opening Scenario

COMPUTER EQUIPMENT AND MESSAGE ENTRY, PART 2

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Using the equipment is a critical aspect of your position as a Radar-Associate controller. Understanding the procedures associated with the equipment allows for safe and expeditious sector operations.

NOTE: The term “message” is being replaced with the term “command” when entering data into the ERAM computer. While you may hear the term “message” in your training at the Academy, the term “command” will be used at ERAM facilities during Stages 2, 3, and 4. For example, computer “message” entry will become computer “command” entry.

Purpose

In this lesson, you will learn to interpret and apply information that is displayed in EDST.

INTRODUCTION *(Continued)*

Lesson Objectives

LESSON OBJECTIVES

In accordance with FAA Order JO 7110.65, TI 6110.101, and TI 6110.100, you will be familiar with:

- EDST Entries for Point-outs
- Alert Coding
- GPD usage and Trial Planning
- Sector Operations

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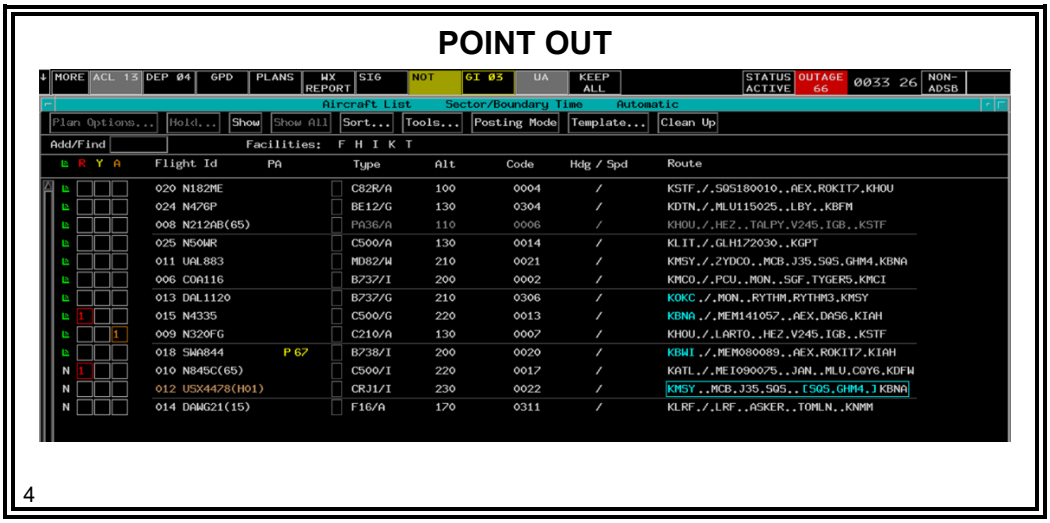
☞ ***NOTE:*** *Teach from graphic.*

EDST ENTRIES

Point Out



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- A point out made from either the R or the RA position and displays on the ACL and Data Block in yellow.
  - **Only** delete the color coding (right-click on the point out data) after the point out has been completed
  - The forced data block remains on the sector that received the point out
  - The color coding will be removed automatically when the receiving sector approves the point out.
    NOTE: This functionality is currently used only on operational sectors, and will not be seen during simulations.
- A point out sent from another sector will display on the ACL and Data Block in blue.

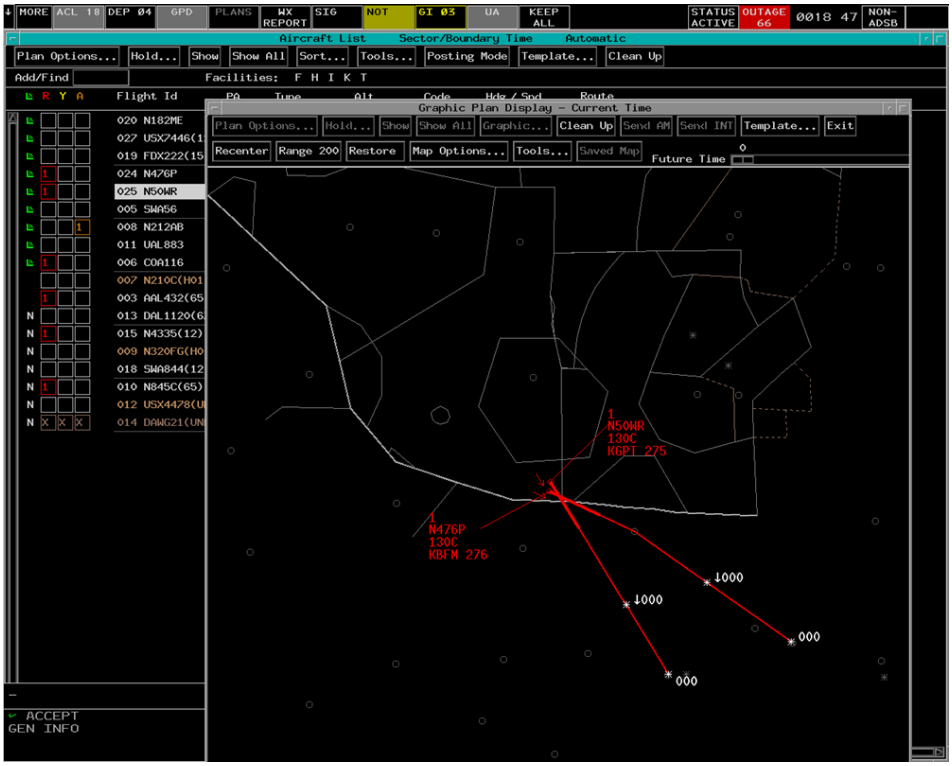
Point Out Column CBI

- In the Point Out Column CBI, you will:
  - Interpret colors and coding used in the Point Out column
  - Change the number of point outs displayed
  - Acknowledge and remove a point out indicator

EDST ENTRIES *(Continued)*

Alert Coding

ALERT CODING



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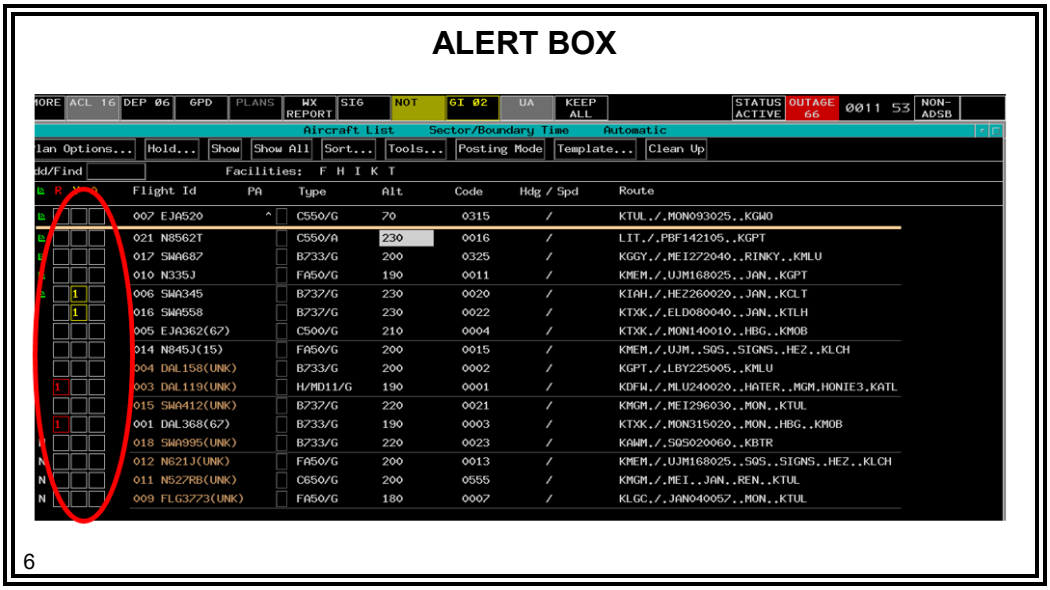
⊙ The controller's priority of red, yellow, and orange alerts may vary according to operational priority.

- Alert time may be used to prioritize alerts
- An imminent yellow alert may take priority over a red alert 15 minutes away
- After viewing and investigating the predicted conflicts, decide what action, if any, you should take

EDST ENTRIES *(Continued)*

Alert Box



⊙ Alert Box

- Left-click selects the Alert Box and activates the Show menu bar button
- Middle-click displays the GPD and performs the Show command for the alert type
- Right-click displays the Conflict Acknowledge Menu

Alert CBI

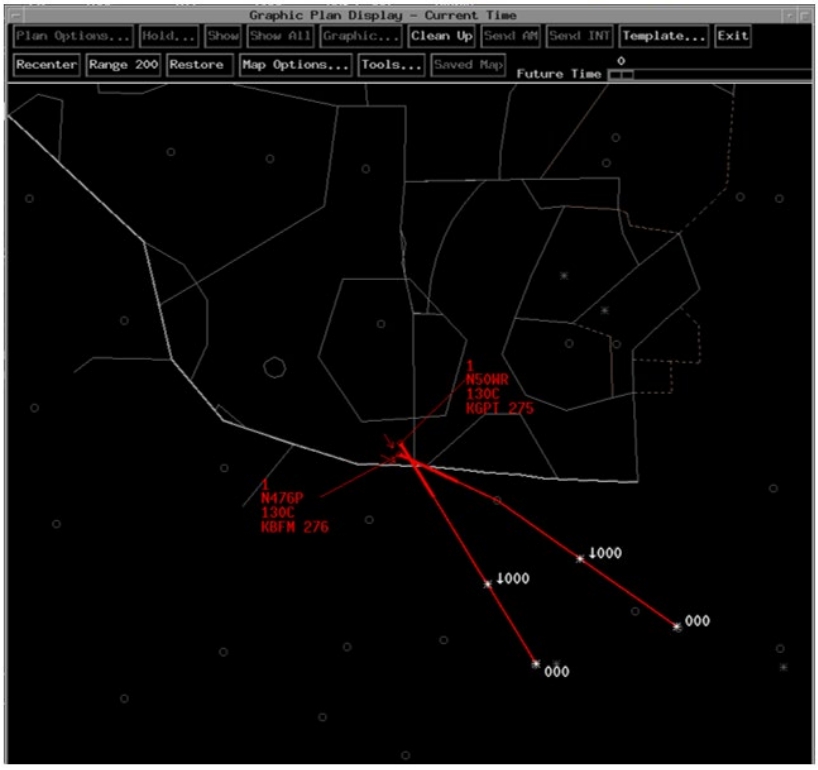
⊙ In the Alert CBI, you will:

- Display alerts on the GPD
- Recognize colors and symbols used for conflict alerts

EDST ENTRIES *(Continued)*

Graphic Plans Display (GPD)

GRAPHIC PLANS DISPLAY (GPD)



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⊙ The Graphic Plans Display (GPD) provides a visual or graphic representation of current plans, trial plans, and surrounding traffic.

- It is **not** Radar and **cannot** be used to separate aircraft
- It is recommended that you use the GPD to evaluate alerts since it is the best way to see where the conflict will occur and the aircraft involved

GPD CBI

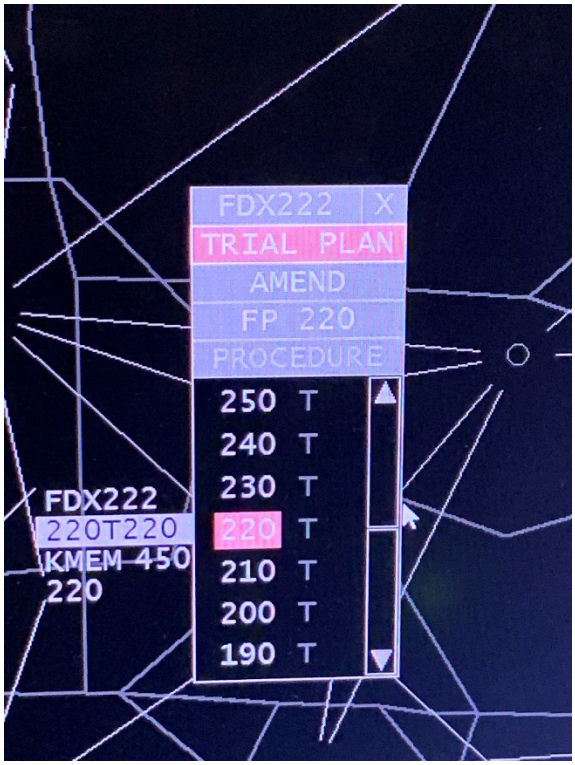
⊙ In the GPD CBI, you will:

- Identify the purpose, capabilities, and layout of the GPD
- Select a new map center point in the GPD
- Change the GPD range and display time
- Set map options per local directives. (See ERAM SOP)
- Offset and suppress/restore data blocks
- Clean up the GPD

EDST ENTRIES *(Continued)*

Trial Planning

TRIAL PLANNING



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- Trial planning may be used to test possible resolutions for conflicts.
  - You can test your ideas for routing and altitude changes before you give them to the aircraft
  - Building a trial plan will display all alerts for that aircraft
- In addition to evaluating conflict resolution, you can trial plan:
  - In response to R-side requests
  - In response to pilot requests
  - For reroutes due to weather
    - Graphic trial planning is very useful for this purpose

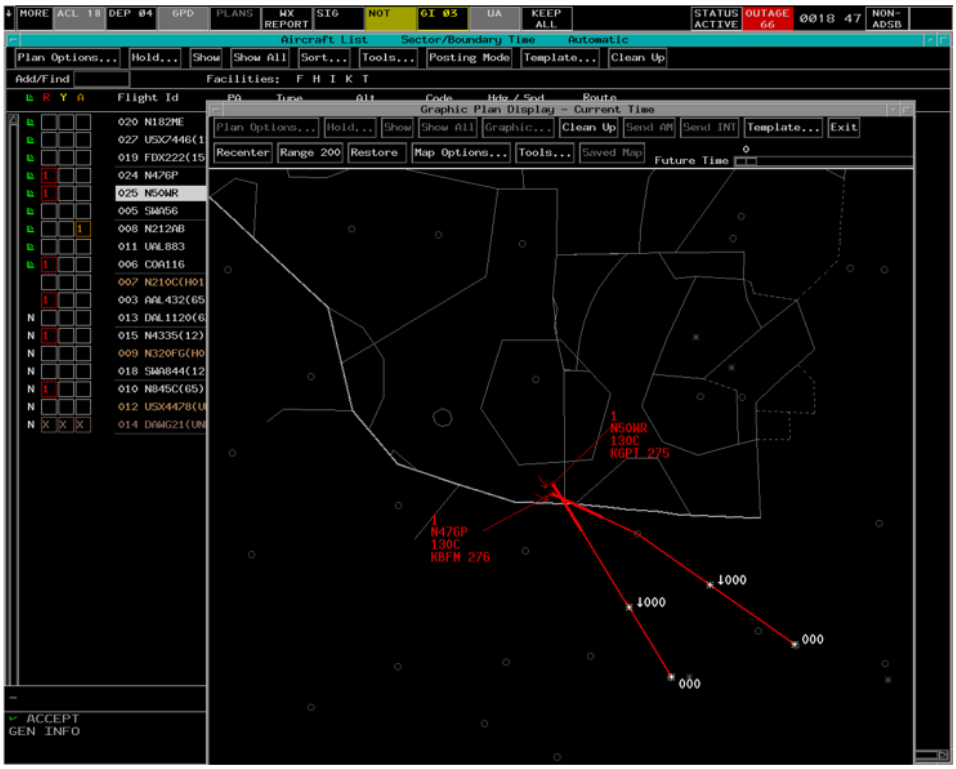
Trial Planning CBI

- In the Trial Planning CBI, you will;
  - Create Trial Plans
  - Interpret Plans Display trial plan entries

EDST ENTRIES *(Continued)*

More Trial Planning

MORE TRIAL PLANNING



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More Trial Planning CBI

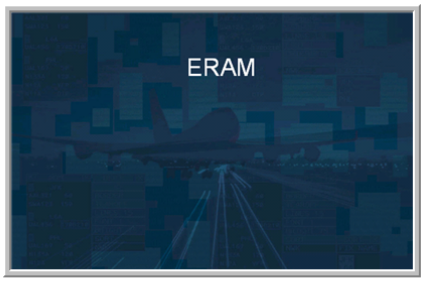
⊙ In the More Trial Planning CBI, you will:

- Resubmit a trial plan
- Send an amendment
- Send an interim altitude
- Learn about Graphic Trial Planning

EDST ENTRIES *(Continued)*

EDST CBIs

CBIs (FOR LESSON PLAN PAGES 1 TO 9)



- Point Out Column
- Alert Coding
- Graphic Plans Display (GPD)
- Trial Planning
- More Trial Planning

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☞ ***NOTE:*** *Have students complete the EDST CBIs listed on the slide.*

Message Practice 4

☞ ***NOTE:*** *Take the students to the lab where they will complete Message Practice 4 (MP_4).*

☞ ***NOTE:*** *Perform each message practice checklist twice per student.*

NOTE: Student Checklists are in their Computer Message Checklists Handout, instructor checklists will be in binders in the ERAM lab (copy for reference). Lead instructors will make sure row instructors are aware of the location of instructor checklists and make sure they are returned to the binder when finished.

EDST ENTRIES *(Continued)*

Rules of Conflict Notification CBI

NOTE: This section contains information on how the system works, but **not** much information on how the controller operates the system.

⊙ In the Rules of Conflict Notification CBI, you will learn the rules for:

- Conflict notification
- Sector control during conflict notification

APD and Plan Processing CBI

⊙ In the APD and Plan Processing CBI, you will learn about:

- Trajectory modeling
- Automated Problem Detection (APD) processing
- Current and trial plan processing

Hold/Stop Probe CBI

⊙ In the Hold/Stop Probe CBI, you will:

- Stop probe for a selected flight
- Identify flights with Hold or Stop Probe
- Resume Probe

EDST CBIs

CBIs (FOR LESSON PLAN PAGE 11)

- Rules of Notification
- APD and Plan Processing
- Hold/Stop Probe

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☞ ***NOTE:*** *Have students complete the EDST CBIs listed on the slide.*

SECTOR OPERATIONS

Considerations

⊙ Things to consider when working the RA position using EDST:

- Number of aircraft in ACL and DL
- Number and types of alerts
- Number of aircraft under sector track control
- Number of routes to be issued (APRs, ERTs…)
- Coordination to be performed
- Sector's proficiency on ERAM (training on sector)
- Weather in and around your sector

☞ ***NOTE:*** *Discuss with students that this is **not** a comprehensive list.*

ACL/DL Use in ZAE Radar Lab

JO 7110.65, pars. 13-1-8, 13-1-9

⊙ Use the Special Posting Area for arrival aircraft, aircraft in hold, and other aircraft that have special significance.

- Middle-click on the Hot Box to put to flight in the Special Posting Area

⊙ Sector Ownership is the same as track control.

- This makes it easy to know where the aircraft is coming from if you need or want to move the aircraft
- Sector number will be in parentheses following the call sign if the aircraft is **not** owned by your sector

⊙ Use the Bookkeeping Box to determine which aircraft are on frequency.

- Left-click on the Bookkeeping Box to make the "N" go away, then click again to make the VCI indicator appear.

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ACL/DL Use in ZAE Radar Lab (Cont'd)
JO 7110.65, pars. 13-1-8, 13-1-9

⊙ With an Unsuccessful Transmission Message (UTM) you **must** manually pass the flight plan or verify that the next sector/facility has the flight plan information.

- Completion of appropriate coordination for a UTM **shall** be acknowledged on the ACL by removing the UTM color coding with a right click

⊙ **Altitude** will show interim altitude input from either R or RA position.

- Interim altitude will follow the assigned altitude in the ACL

⊙ Sort Order may be changed to accommodate traffic.

Example: Sorting by destination is useful for TMU reroutes or to identify arrivals that will hold.

⊙ Highlighting an entry on the ACL or DL can be used in a way similar to offsetting a strip to indicate a flight requires an action or special attention.

- Right-click in the Hot Box to highlight the entire flight plan

⊙ Free-Form Text using the Free Text Area (Hot Box typing buffer) is for making notes **not** forwarded to anyone.

- Authorized abbreviations **shall** be used

NOTE: Refer to Appendix A for abbreviations and control symbols.

  – Plain language markings when it will aid in understanding information

- Free Text Area **shall** remain open and visible

  – When **no** longer relevant **shall** be updated or deleted

- Left-click on the hot box to begin typing the data
- Hit ENTER to finish

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ACL/DL Use in ZAE Radar Lab (Cont'd)
JO 7110.65, pars. 13-1-8, 13-1-9

⊙ **Alert Coding**

- **Red** indicates that the aircraft-to-aircraft predicted separation is less than standard separation
- **Yellow** indicates that the aircraft-to-aircraft predicted separation is greater than or equal to standard separation, but within the detection threshold (5-12 NM)
  - Also used for IAFDOF, UTM, scratchpad heading/speed, EDCT, point outs, System Status Display, and Toolbar Display
- **Orange** indicates aircraft-to-airspace conflict
- **Blue** indicates Route Action Notification (APRs and ERTs)

⊙ **Alert Box**

- **XXX** in all three alert boxes signifies the flight is **not** being probed for conflicts.
- **HHH** in all three alert boxes signifies that the aircraft has entered the Hold and is **not** being probed downstream for conflicts

NOTE: Remember, once you have issued a clearance for 0M8 and VKS, you **must** enter a Departure Message, start a track and enter the interim altitude that you issued.

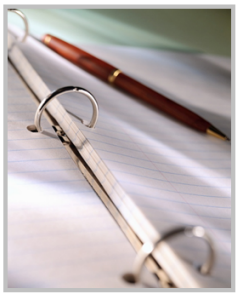
IN CONCLUSION

Lesson Review

LESSON REVIEW

The following topics were covered earlier in Computer Equipment & Message Entry, Part 1:

- Purpose of ERAM and its basic operations.
- Benefits of EDST.
- Computer Messages



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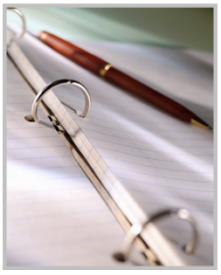
Lesson Review

LESSON REVIEW

The following topics were covered in Computer Equipment and Message Entry, Part 2

- EDST Entries for Point-outs, Alert Coding, GPD usage and Trial Planning
- Sector Operations



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☞ ***NOTE:*** *Teach from graphic. Review and elaborate briefly on the topics covered in Computer Equipment and Messaging, Part 1 and Computer Equipment and Messaging, Part 2.*

NOTE: *Take the students to the lab where they will complete Message Practice 5 (MP_5). Each student will run MP_5 twice.*

APPENDIX A: ABBREVIATIONS AND CONTROL SYMBOLS

Clearance Abbreviations
JO 7110.65,
tbl 13-1-1

ABBREVIATION	MEANING
A	Cleared to airport (point of intended landing)
B	Center clearance delivered
C	ATC clears (when clearance relayed through non-ATC facility)
CAF	Cleared as filed
D	Cleared to depart from the fix
F	Cleared to the fix
H	Cleared to hold and instructions issued
N	Clearance not delivered
O	Cleared to the outer marker
PD	Cleared to climb/descend at pilot's discretion
Q	Cleared to fly specified sectors of a NAVAID defined in terms of courses, bearings, radials, or quadrants within a designated radius
T	Cleared through (for landing and takeoff through intermediate point)
V	Cleared over the fix
X	Cleared to cross (airway, route, radial) at (point)
Z	Tower jurisdiction

APPENDIX A: ABBREVIATIONS AND CONTROL SYMBOLS *(Continued)*

Miscellaneous Abbreviations
JO 7110.65,
tbl 13-1-2

ABBREVIATION	MEANING
BC	Back course approach
CT	Contact approach
FA	Final approach
FMS	Flight management system approach
GPS	GPS approach
I	Initial approach
ILS	ILS approach
MA	Missed approach
MLS	MLS approach
NDB	Nondirectional radio beacon approach
OTP	VFR conditions-on-top
PA	Precision approach
PT	Procedure turn
RA	Resolution advisory (Pilot-reported TCAS event)
RH	Runway heading
RNAV	Area navigation approach
RP	Report immediately upon passing (fix/altitude)
RX	Report crossing
SA	Surveillance approach
SI	Straight-in approach
TA	TACAN approach
TL	Turn left
TR	Turn right
VA	Visual approach
VR	VOR approach

APPENDIX A: ABBREVIATIONS AND CONTROL SYMBOLS *(Continued)*

EDST Equivalents for Control Information Symbols
JO 7110.65, tbl 13-1-3

ABBREVIATION	MEANING
T *dir*	Depart (direction if specified)
↑	Climb and maintain
↓	Descend and maintain
CR	Cruise
AT	At
X	Cross
M	Maintain
/airway	Join or intercept (airway, jet route, track, or course)
=	While in controlled airspace
WICA	While in control area
dir ECA	Enter control area
dir OOCA	Out of control area
dir ESA	Cleared to enter surface area. Indicated direction of flight by appropriate compass letter(s)
TSA *alt*	Through surface area and altitude indicated direction of flight by appropriate compass letter(s). Maintain special VFR conditions (altitude if appropriate) while in surface area
250 K	Aircraft requested to adjust speed to 250 knots
-20 K	Aircraft requested to reduce speed 20 knots
+30 K	Aircraft requested to increase speed 30 knots
SVFR	Local Special VFR operations in the vicinity of (name) airport are authorized until (time). Maintain special VFR conditions (Altitude if appropriate)
B4	Before
AF	After or Past
/	Until
instructions	Alternate instructions
REST	Restriction
AOB	At or Below
AOA	At or Above
-	From-to (Route, time, etc.)
(Alt)B(Alt)	Indicates a block altitude assignment. Altitudes are inclusive, and the first altitude shall be lower than the second (Example 310B370)

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APPENDIX A: ABBREVIATIONS AND CONTROL SYMBOLS *(Continued)*

EDST Equivalents for Control Information Symbols (Cont'd)
JO 7110.65, tbl 13-1-3

ABBREVIATION	MEANING
V *time*	Clearance void if aircraft not off ground by *time*
CL	Pilot canceled flight plan
+info+	Information or revised information forwarded
alt	Other than assigned altitude reported Example" **50**
ARC *mi. dir.*	DME arc of VORTAC, TACAN, or MLS
C *freq.*	Contact (facility) or (freq.), (time, fix, or altitude if appropriate). Insert frequency only when it is other than standard
R	Radar contact
R *alt*	Requested altitude
R/	Radar service terminated
RX	Radar Contact Lost
RV	Radar vector
RVX	Pilot resumed own navigation
HO	Handoff completed
E	Emergency
W	Warning
P	Point out initiated. Indicate the appropriate facility, sector, or position.
FUEL	Minimum fuel
EFC *time*	Expect further clearance at (time)
- *fix*	Direct to fix
FRC	Full route clearance
IAF	Initial approach fix
NORDO	No Radio
PT	Procedure turn
RLS	Release
REQ	Request
SI	Straight in

FP – AID TYP (BCN) SPD FIX TIM ALT/RAL RTE

RTE (QU)

HALO (QPJ)

PVD (QP)

DM

TRK (QT)

DROP TRK (QX)

RS

ALT (QZ)

INT (QQ)

CODE (QB)

SR

HOLD (QH)

AM

VP

Continued on next page

USING HOT NONE KEY

Handoffs:

Offset a FDB:

Change leader line:

Force data block:

4th line (QS):