# Airport Surface Detection Equipment – Model X
# Early User Involvement Event

## Final Report

## Volume II

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# Preface

Volume II comprises the eight appendixes for the June 2001 document entitled *Airport Surface Detection Equipment – Model X (ASDE-X) Early User Involvement Event (EUIE) Final Report Volume I*. The EUIE, which was sponsored by the Product Team Lead for Terminal Surveillance (AND-440), evaluated the March 2001 model version of the ASDE-X computer-human interface. Volume I provides the ASDE-X EUIE Introduction, Method, Results, and Conclusions. Volume II contains the training and test materials used in support of the March 2001 EUIE conducted at the William J. Hughes Technical Center. It includes the ASDE-X Hands-On Training Scripts, Usability Scripts, Background Questionnaire, Post-Script Questionnaires (PSQs), Readability Data Collection Form, Readability Questionnaire, Exit Questionnaire, and the Statement of Confidentiality and Informed Consent.

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# APPENDIX A

## ASDE-X HANDS-ON TRAINING

The hands-on training script introduced EUIE participants to relevant elements of the March 2001 version of the ASDE-X interface. It contains 86 detailed procedures identifying how to implement the function and the methods available. The functions are generally organized according to the Display Control Bar (DCB) arrangement except that more complex functions are located near the end of the training. Some of the functions did not work in the March 2001 model, but they were described in the training.

Appendix A

Hands-On Training

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# ASDE-X HANDS-ON TRAINING

## Function 1: Range Scale Using Trackball Only

Objective: Set the range scale in the active window using the trackball to activate the function and to adjust the range scale.

a) Use the trackball to move the cursor over the RANGE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Map Range Adjust function.

c) Adjust the range scale by rolling the trackball up and/or down. (The range scale in the active window will change as you roll the trackball. The number on the second line of the RANGE button will indicate the current range scale in hundreds of feet)

d) Observe the functional feedback in the preview area.

e) Press the left button on the trackball to complete the Map Range Adjust function.

f) Observe that the range scale in the active window changed.

## Function 2: Range Scale Using Trackball and Keyboard

Objective: Set the range scale in the active window using the trackball to activate the function and the keyboard to adjust the range scale.

a) Use the trackball to move the cursor over the RANGE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Map Range Adjust function.

c) Use the keyboard to type the desired range scale for the active window (The valid values are from 3 – 600. The range setting is in hundreds of feet, so 10,000 feet = **100**).

d) Observe the functional feedback in the preview area.

e) Press the < ENTER> key on the keyboard.

f) Observe that the range scale in the active window changed.

g) Verify the range scale setting by reading the value on the second line of the RANGE button. The readouts vary from 3 to 600 and represent hundreds of feet.

## Function 3: Range Scale Using Trackball and Keypad

Objective: Set the range scale in the active window using the trackball to activate the function and the keypad to adjust the range scale.

a) Use the trackball to move the cursor over the RANGE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the RANGE function.

c) Use the keypad to type the desired range scale for the active window (The valid values are from 3 – 600. The range setting is in hundreds of feet, so 10,000 feet = **100**).

d) Observe the functional feedback in the preview area.

e) Press the < ENTER> key on the keypad.

f) Observe that the range scale in the active window changed.

g) Verify the range scale setting by reading the value on the second line of the RANGE button. The readouts vary from 3 to 600 and represent hundreds of feet.

## Function 4: Map Reposition Using Trackball Only

Objective: Reposition the map in the active window using the trackball to activate the function and to adjust the map position.

a) Use the trackball to move the cursor over the MAP RPOS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Map Reposition function.

c) Adjust the map position by rolling the trackball in any direction. (The map position in the active window will change as you roll the trackball)

d) Observe the functional feedback in the preview area.

e) Press the left button on the trackball to complete the MAP RPOS function.

f) Observe that the map position changed in the active window.

## Function 5: Map Reposition Using Keyboard and Trackball

Objective: Reposition the map in the active window using the keyboard to activate the function and the trackball to adjust the map position.

a) Use the keyboard to activate the Map Reposition function by pressing the < MAP RPOS> key. (The < MAP RPOS> key is located over the < 8> key)

b) Adjust the map position by rolling the trackball in any direction. (The map position in the active window will change as you roll the trackball)

c) Observe the functional feedback in the preview area.

d) Press the left button on the trackball (or the < ENTER> key on the keyboard) to complete the MAP RPOS function.

e) Observe that the map position changed in the active window.

## Function 6: Map Rotate Using Trackball Only

Objective: Rotate the map in the active window using the trackball to activate the function and to adjust the map rotation.

a) Use the trackball to move the cursor over the ROTATE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Map Rotate function.

c) Adjust the map heading to the desired heading by rolling the trackball left and/or right. (The map heading in the active window will change as you roll the trackball. The number on the second line of the ROTATE button will display the current map heading)

d) Observe the functional feedback in the preview area.

e) Press the left button on the trackball to complete the ROTATE function.

f) Verify the map heading by reading the value on the second line of the ROTATE button. The readouts vary from 0 to 359 and represent degrees.

## Function 7: Map Rotate Using Trackball and Keyboard

Objective: Rotate the map in the active window using the trackball to activate the function and the keyboard to adjust the map rotation.

a) Use the trackball to move the cursor over the ROTATE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Map Rotate function.

c) Adjust the map heading to the desired heading by typing the heading on the keyboard.

d) Observe the functional feedback in the preview area.

e) Press the < ENTER> key on the keyboard.

f) Observe that the map heading in the active window changed.

g) Verify the map heading by reading the value on the second line of the ROTATE button. The readouts vary from 0 to 359 and represent degrees.

## Function 8: Map Rotate Using Trackball and Keypad

Objective: Rotate the map in the active window using the trackball to activate the function and the keypad to adjust the map rotation.

a) Use the trackball to move the cursor over the ROTATE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Map Rotate function.

c) Adjust the map heading to the desired heading by typing the heading on the keypad.

d) Observe the functional feedback in the preview area.

e) Press the < ENTER> key on the keypad.

f) Observe that the map heading in the active window changed.

g) Verify the map heading by reading the value on the second line of the ROTATE button. The readouts vary from 0 to 359 and represent degrees.

## Function 9: Home Using Trackball

Objective: Restore the display channel to the default home configuration using the trackball. (What about HOME from the Pref Submenu?)

a) Use the trackball to move the cursor over the HOME button on the Display Control Bar (DCB).

b) Press the left button on the trackball to execute the HOME function.

c) Verify that the display channel has changed to the default home configuration.

## Function 10: Home Using Keyboard

Objective: Restore the display channel to the default home configuration using the keyboard.

a) Use the keyboard to execute the HOME function by pressing the < HOME> key. (The < HOME> key is located over the < BACKSPACE> key)

b) Verify that the display channel has changed to the default home configuration.

## Function 11: Adjust Brightness Using Trackball

Objective: Adjust the brightness of runways in the active window using the trackball.

a) Use the trackball to move the cursor over the BRITE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Brightness submenu.

c) Use the trackball to move the cursor over the desired adjustment button on the DCB. Available buttons are:

1. RUNWAY
2. TAXIWAY
3. APRON
4. BAKGND1
5. BAKGND2
6. TRACK
7. DATA BLOCKS
8. LISTS
9. TEMP MAP DATA
10. DCB

d) Press the left button on the trackball to activate the Brightness Adjustment function.

e) Adjust the brightness by rolling the trackball up and/or down. (The brightness of selected elements in the active window will change as you roll the trackball.)

f) Observe the functional feedback in the preview area.

g) Press the left button on the trackball to complete the Brightness Adjustment function.

h) Use the trackball to move the cursor over the DONE button in the Brightness submenu on the DCB.

i) Press the left button on the trackball to return to the main DCB.

## Function 12: Adjust Brightness Using Keyboard

Objective: Adjust the brightness of runways in the active window using the keyboard.

a) Use the trackball to move the cursor over the BRITE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Brightness submenu.

c) Use the trackball to move the cursor over the desired adjustment button on the DCB. Available buttons are:

1. RUNWAY
2. TAXIWAY
3. APRON
4. BAKGND1
5. BAKGND2
6. TRACK
7. DATA BLOCKS
8. LISTS
9. TEMP MAP DATA
10. DCB

d) Press the left button on the trackball to activate the Brightness Adjustment function.

e) Use the keyboard to type the desired value.

f) Observe the functional feedback in the preview area.

g) Press the < ENTER> key on the keyboard.

h) Observe that the brightness of selected elements in the active window changed.

i) Use the trackball to move the cursor over the DONE button in the Brightness submenu on the DCB.

j) Press the left button on the trackball to return to the main DCB.

## Function 13: Adjust Brightness Using Keypad

Objective: Adjust the brightness of runways in the active window using the keypad.

a) Use the trackball to move the cursor over the BRITE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Brightness submenu.

c) Use the trackball to move the cursor over the desired adjustment button on the DCB. Available buttons are:

1. RUNWAY
2. TAXIWAY
3. APRON
4. BAKGND1
5. BAKGND2
6. TRACK
7. DATA BLOCKS

8. LISTS
9. TEMP MAP DATA
10. DCB
11. HISTORY TRAILS

d) Press the left button on the trackball to activate the Brightness Adjustment function.

e) Use the keypad to type **75** (adjustable range = 1 – 100).

f) Observe the functional feedback in the preview area.

g) Press the < ENTER> key on the keypad.

h) Observe that the brightness of selected elements in the active window changed.

i) Use the trackball to move the cursor over the DONE button in the Brightness submenu on the DCB.

j) Press the left button on the trackball to return to the main DCB.

## Function 14: Toggle the Day/Night Color Palette Using Trackball

Objective: Change the color palette from day to night (or night to day).

a) Use the trackball to move the cursor over the DAY/NITE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to change the color palette from day to night (or night to day).

c) Verify that the display channel has changed to the other color palette.

## Function 15: Toggle the Day/Night Color Palette Using Keyboard

Objective: Change the color palette from day to night (or night to day).

a) Use the keyboard to change the color palette from day to night (or night to day) by pressing the < DAY/NITE> key. (The < DAY/NITE> key is located above the < 9> key.)

b) Verify that the display channel has changed to the other color palette.

## Function 16: Toggle the Day/Night Color Palette Using Keypad

Objective: Change the color palette from day to night (or night to day).

a) Use the keypad to change the color palette from day to night (or night to day) by pressing the < DAY/NITE> key. (The < DAY/NITE> key is located above the < 3> key.)

b) Verify that the display channel has changed to the other color palette.

## Function 17: Adjust Character Size Using Trackball

Objective: Adjust the character size of data blocks in the active window using the trackball.

a) Use the trackball to move the cursor over the CHAR SIZE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Character Size submenu.

c) Use the trackball to move the cursor over the desired adjustment button on the DCB. Available buttons are:

   1. DATA BLOCK (adjustable range = 1 – 6)
   2. DCB (adjustable range = 1 – 3)
   3. COAST SUSPEND (adjustable range = 1 – 6)
   4. TEMP DATA (adjustable range = 1 – 6)
   5. PREVIEW AREA (adjustable range = 1 – 6)

d) Press the left button on the trackball to activate the Character Size Adjustment function.

e) Adjust the character size by rolling the trackball up and/or down. (The character size of selected elements in the active window will change as you roll the trackball.)

f) Observe the functional feedback in the preview area.

g) Press the left button on the trackball to complete the Character Size Adjustment function.

h) Use the trackball to move the cursor over the DONE button in the Character Size submenu on the DCB.

i) Press the left button on the trackball to return to the main DCB.

## Function 18: Adjust Character Size Using Keyboard

Objective: Adjust the character size of data blocks in the active window using the keyboard.

a) Use the trackball to move the cursor over the CHAR SIZE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Character Size submenu.

c) Use the trackball to move the cursor over the desired adjustment button on the DCB. Available buttons are:

   1. DATA BLOCK (adjustable range = 1 – 6)
   2. DCB (adjustable range = 1 – 3)

3. COAST SUSPEND (adjustable range = 1 – 6)
4. TEMP DATA (adjustable range = 1 – 6)
5. PREVIEW AREA (adjustable range = 1 – 6)

d) Press the left button on the trackball to activate the Character Size Adjustment function.

e) Use the keyboard to type the desired font size.

f) Observe the functional feedback in the preview area.

g) Press the < ENTER> key on the keyboard.

h) Observe that the character size of selected elements in the active window changed.

i) Use the trackball to move the cursor over the DONE button in the Character Size submenu on the DCB.

j) Press the left button on the trackball to return to the main DCB.

## Function 19: Adjust Character Size Using Keypad

Objective: Adjust the character size of data blocks in the active window using the keypad.

a) Use the trackball to move the cursor over the CHAR SIZE button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Character Size submenu.

c) Use the trackball to move the cursor over the desired adjustment button on the DCB. Available buttons are:

1. DATA BLOCK (adjustable range = 1 – 6)
2. DCB (adjustable range = 1 – 3)
3. COAST SUSPEND (adjustable range = 1 – 6)
4. TEMP DATA (adjustable range = 1 – 6)
5. PREVIEW AREA (adjustable range = 1 – 6)

d) Press the left button on the trackball to activate the Character Size Adjustment function.

e) Use the keypad to type the desired font size.

f) Observe the functional feedback in the preview area.

g) Press the < ENTER> key on the keypad.

h) Observe that the character size of selected elements in the active window changed.

i) Use the trackball to move the cursor over the DONE button in the Character Size submenu on the DCB.

j) Press the left button on the trackball to return to the main DCB.

## Function 20: Adjust Leader Line Length Using Trackball

Objective: Adjust the length of all leader lines in the active window using the trackball.

a) Use the trackball to move the cursor over the LDR LNG button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Leader Line Length Adjustment function.

c) Adjust the leader line length by rolling the trackball up and/or down. (The leader line length in the active window will change as you roll the trackball.)

d) Observe the functional feedback in the preview area.

e) Press the left button on the trackball to complete the Leader Line Length Adjustment function.

f) Verify that the leader lines in the active window are now the correct length (the second line of the LDR LNG button displays the current length of leader lines in the active window).

## Function 21: Adjust Leader Line Length Using Trackball and Keyboard

Objective: Adjust the length of all leader lines in the active window using the trackball and the keyboard.

a) Use the trackball to move the cursor over the LDR LNG button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Leader Line Length Adjustment function.

c) Use the keyboard to change the leader line length in the active window

1. Type the desired length for leader lines in the active window (range = 0 – 9).
2. Observe the functional feedback in the preview area.
3. Press the < ENTER> key.

d) Verify that the leader lines in the active window are now the correct length (the second line of the LDR LNG button displays the current length of leader lines in the active window).

## Function 22: Adjust Leader Line Length Using Trackball and Keypad

Objective: Adjust the length of all leader lines in the active window using the trackball and the keypad.

a) Use the trackball to move the cursor over the LDR LNG button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Leader Line Length Adjustment function.

c) Use the keypad to change the leader line length in the active window

1. Type the desired length for leader lines in the active window (range = 0 – 9).
2. Observe the functional feedback in the preview area.
3. Press the < ENTER> key.

d) Verify that the leader lines in the active window are now the correct length (the second line of the LDR LNG button displays the current length of leader lines in the active window).

## Function 23: Adjust Leader Line Length Using Keyboard

Objective: Adjust the length of all leader lines in the active window using the keyboard.

a) Use the keyboard to change the leader line length in the active window

1. Press the < /> key (The < /> key is located below the < ;> key).
2. Type the desired length for leader lines in the active window (range = 0 – 9).
3. Observe the functional feedback in the preview area.
4. Press the < ENTER> key.

b) Verify that the leader lines in the active window are now the correct length (the second line of the LDR LNG button displays the current length of leader lines in the active window).

## Function 24: Toggle Velocity Vector Lines (on/off) Using Trackball

Objective: Toggle the velocity vector lines in the active window using the trackball.

a) Use the trackball to move the cursor over the VECTOR ON/OFF button on the Display Control Bar (DCB).

b) Press the left button on the trackball to toggle the velocity vector lines in the active window.

c) Verify that the velocity vector lines toggled (on/off) in the active window.

## Function 25: Create Secondary Window Using Trackball

Objective: Create a secondary window using the trackball

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Use the trackball to move the cursor over the NEW WINDOW button on the DCB.

d) Press the left button on the trackball to create a new secondary window.

e) Observe that a new secondary window appeared on the display.

f) Roll the trackball in any direction to position the new window in the desired location.

g) Press the left button on the trackball to anchor the new secondary window in the desired location.

h) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

i) Press the left button on the trackball to return to the main DCB.

## Function 26: Create Secondary Window Using Keyboard

Objective: Create a secondary window using the keyboard

a) Use the keyboard to create a new secondary window by pressing the < NEW WNDW> key. (The < NEW WNDW> key is located above and to the right of the < 0> key)

b) Observe that a new secondary window appeared on the display.

c) Roll the trackball in any direction to position the new window in the desired location.

d) Press the left button on the trackball to anchor the new secondary window in the desired location.

e) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

f) Press the left button on the trackball to return to the main DCB.

## Function 27: Delete Secondary Window Using Trackball

Objective: Delete the active secondary window using the trackball

a) Use the trackball to move the cursor over the secondary window that you wish to delete.

b) Press the left button on the trackball to select that window as the active window.

c) Verify that the secondary window is now the active window. (The border around the window turns blue to indicate that the window is active.)

d) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

e) Press the left button on the trackball to open the Tools submenu.

f) Use the trackball to move the cursor over the DELETE WINDOW button on the DCB.

g) Press the left button on the trackball to delete the active secondary window.

h) Observe that the active secondary window was deleted from the display.

i) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

j) Press the left button on the trackball to return to the main DCB.

## Function 28: Resize Secondary Window Using Trackball

Objective: Resize the active secondary window using the Trackball to select the function and adjust the window size.

a) Use the trackball to move the cursor over the secondary window that you wish to resize.

b) Press the left button on the trackball to select that window as the active window.

c) Verify that the secondary window is now the active window. (The border around the window turns blue to indicate that the window is active.)

d) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

e) Press the left button on the trackball to open the Tools submenu.

f) Use the trackball to move the cursor over the RESIZE WINDOW button on the DCB.

g) Press the left button on the trackball to activate the Resize Secondary Window function.

h) Roll the trackball in any direction to adjust the position of the lower right-hand corner of the new window to the desired location.

i) Press the left button on the trackball to anchor the corner of the secondary window in the desired location.

j) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

k) Press the left button on the trackball to return to the main DCB.

## Function 29: Reposition Secondary Window Using Trackball

Objective: Reposition the active secondary window using the trackball to activate the function and to reposition the window.

a) Use the trackball to move the cursor over the secondary window that you wish to resize.

b) Press the left button on the trackball to select that window as the active secondary window.

c) Verify that the secondary window is now the active window. (The border around the window turns blue to indicate that the window is active.)

d) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

e) Press the left button on the trackball to open the Tools submenu.

f) Use the trackball to move the cursor over the WINDOW RPOS button on the DCB.

g) Press the left button on the trackball to activate the Reposition Secondary Window function.

h) Roll the trackball in any direction to position the active window in the desired location.

i) Press the left button on the trackball to anchor the new secondary window in the desired location.

j) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

k) Press the left button on the trackball to return to the main DCB.

## Function 30: Toggle History Trails (on/off) Using Trackball

Objective: Toggle the history trails in the active window

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Observe the functional feedback in the preview area.

d) Use the trackball to move the cursor over the HISTORY ON/OFF button on the DCB.

e) Press the left button on the trackball to toggle the target history trails in the active window.

f) Verify that the target history trails toggled (on/off) in the active window.

g) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

h) Press the left button on the trackball to return to the main DCB.

## Function 31: Adjust History Trail Length Using Trackball

Objective: Adjust the number of history data points in the active window using the trackball

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Use the trackball to move the cursor over the HISTORY button on the DCB.

d) Press the left button on the trackball to activate the History Trail Length Adjustment function.

e) Adjust the length of history trails in the active window by rolling the trackball up and/or down. (The length of history trails in the active window will change as you roll the trackball.)

f) Press the left button on the trackball to complete the History Trail Length Adjustment function.

g) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

h) Press the left button on the trackball to return to the main DCB.

## Function 32: Adjust History Trail Length Using Trackball and Keyboard

Objective: Adjust the number of history data points in the active window using the keyboard.

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Use the trackball to move the cursor over the HISTORY button on the DCB.

d) Press the left button on the trackball to activate the History Trail Length Adjustment function.

e) Use the keyboard to type the desired history trail length (range 1 – 5).

f) Press the left button on the trackball to complete the History Trail Length Adjustment function.

g) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

h) Press the left button on the trackball to return to the main DCB.

## Function 33: Adjust History Trail Length Using Keyboard

Objective: Adjust the number of history data points in the active window using the keyboard.

a) Use the keyboard to select the desired preference set

1. Press the < MULTI FUNC> key (The < MULTI FUNC> key is located over the < 7> key).
2. Press the < H> key.
3. Use the keyboard to type the desired history trail length (range 1 – 5).
4. Press the < ENTER> key.

b) Verify that the length of history trails in the active window changed.

## Function 34: Toggle Track Coast/Suspend List (on/off) Using Trackball

Objective: Toggle the track coast/suspend list

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Use the trackball to move the cursor over the COAST ON/OFF button on the DCB.

d) Press the left button on the trackball to toggle the track coast/suspend list.

e) Verify that the coast suspend list toggled (on/off).

f) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

g) Press the left button on the trackball to return to the main DCB.

## Function 35: Toggle Track Coast/Suspend List (on/off) Using Keyboard

Objective: Toggle the track coast/suspend list

a) Use the keyboard to toggle the track coast/suspend list

1. Press the < MULTI FUNC> key. (The < MULTI FUNC> key is located over the < 7> key)
2. Press the < L> key.

b) Verify that the coast suspend list toggled (on/off).

## Function 36: Reposition Track Coast/Suspend List Using Trackball

Objective: Reposition track coast/suspend list using the DCB

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Use the trackball to move the cursor over the COAST RPOS button on the DCB.

d) Press the left button on the trackball to activate the COAST RPOS function.

e) Adjust the coast list position by rolling the trackball in any direction. (The coast list position will change as you roll the trackball)

f) Press the left button on the trackball to anchor the track coast/suspend list in the desired location.

g) Use the trackball to move the cursor over the DONE button in the User Preferences submenu on the DCB.

h) Press the left button on the trackball to return to the main DCB.

## Function 37: Adjust Cursor Speed Using the Trackball

Objective: Adjust the cursor speed through the DCB

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Use the trackball to move the cursor over the CUR SPD button on the DCB.

d) Press the left button on the trackball to activate the Cursor Speed Adjustment function.

e) Adjust the cursor speed by rolling the trackball up and/or down. (The number on the second line of the CUR SPD button will reflect the current speed adjustment)

f) Press the left button on the trackball to complete the Cursor Speed Adjustment function.

g) Observe that the cursor speed has changed. (The number on the second line of the CUR SPD button reflects the current speed adjustment, and the cursor should move faster or slower, depending upon the adjustment you made.)

h) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

i) Press the left button on the trackball to return to the main DCB.

## Function 38: Adjust Cursor Speed Using the Keyboard

Objective: Adjust the cursor speed through the DCB and keyboard

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Observe the functional feedback in the preview area.

d) Use the trackball to move the cursor over the CUR SPD button on the DCB.

e) Press the left button on the trackball to activate the Cursor Speed Adjustment function.

f) Use the keyboard to type the desired Cursor Speed (range 1 – 10).

g) Observe the functional feedback in the preview area.

h) Press the < ENTER> key on the keyboard.

i) Observe that the cursor speed has changed. (The number on the second line of the CUR SPD button reflects the current speed adjustment, and the cursor should move faster or slower, depending upon the adjustment you made.)

j) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

k) Press the left button on the trackball to return to the main DCB.

## Function 39: Reposition the Preview Area Using the Trackball

Objective: Reposition the preview area through the DCB

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Observe the functional feedback in the preview area.

d) Use the trackball to move the cursor over the PREVIEW RPOS button on the DCB.

e) Press the left button on the trackball to activate the Preview Area Reposition function.

f) Adjust the preview area position by rolling the trackball in any direction.

g) Observe the functional feedback in the preview area.

h) Press the left button on the trackball to complete the Preview Area Reposition function.

i) Verify that the preview area has moved by pressing the < MULTI FUNC> key on the keyboard and observing the feedback in the preview area.

j) Press the < CLEAR> key to clear the preview area.

k) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

l) Press the left button on the trackball to return to the main DCB.

## Function 40: Reposition the Preview Area Using the Keyboard

Objective: Reposition the preview area through the Hotkey

a) Use the keyboard to activate the Preview Area Reposition function.

   1. Press the < MULTI FUNC> key on the keyboard. (The < MULTI FUNC> key is located above the < 7> key.)
   2. Press the < P> key on the keyboard.

b) Adjust the preview area position by rolling the trackball in any direction.

c) Observe the functional feedback in the preview area.

d) Press the left button on the trackball to complete the Preview Area Reposition function.

e) Verify that the preview area has moved by pressing the < MULTI FUNC> key on the keyboard and observing the feedback in the preview area.

f) Press the < CLEAR> key to clear the preview area.

g) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

h) Press the left button on the trackball to return to the main DCB.

## Function 41: Toggle Cursor Home (on/off) Using Trackball

Objective: Toggle the cursor home function on or off

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Observe the functional feedback in the preview area.

d) Use the trackball to move the cursor over the CURSOR HOME button on the DCB.

e) Press the left button on the trackball to toggle (on/off) the Cursor Homing function.

f) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

g) Press the left button on the trackball to return to the main DCB.

h) Verify that the cursor homing function has toggled (on/off) by moving the trackball.

## Function 42: Vector Length Selection Using Trackball

Objective: Change the length of the velocity vector by using the trackball

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Observe the functional feedback in the preview area.

d) Use the trackball to move the cursor over the VECTOR LENGTH button on the DCB.

e) Press the left button on the trackball to activate the Velocity Vector Length Adjustment function.

f) Adjust the length of velocity vectors in the active window by rolling the trackball up and/or down. (The length of velocity vectors in the active window will change as you roll the trackball.)

g) Press the left button on the trackball to complete the Velocity Vector Length Adjustment function.

h) Verify that the length of velocity vectors in the active window changed. (The current length is displayed on the second line of the VECTOR LENGTH button.)

i) Use the trackball to move the cursor over the DONE button in the User Preferences submenu on the DCB.

j) Press the left button on the trackball to return to the main DCB.

## Function 43: Vector Length Selection Using Trackball and Keyboard

Objective: Change the length of the velocity vector by using the trackball to activate the function and the keyboard to adjust the length

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Observe the functional feedback in the preview area.

d) Use the trackball to move the cursor over the VECTOR LENGTH button on the DCB.

e) Press the left button on the trackball to activate the Velocity Vector Length Adjustment function.

f) Use the keyboard to type the desired Velocity Vector Length (range 0 – 10).

g) Observe the functional feedback in the preview area.

h) Press the < ENTER> key on the keyboard to select the Velocity Vector Length in the active window.

i) Verify that the length of velocity vectors in the active window have changed (The second line of the VECTOR LENGTH button displays the current length of vector lines in the active window.)

j) Use the trackball to move the cursor over the DONE button in the Tools submenu on the DCB.

k) Press the left button on the trackball to return to the main DCB.

## Function 44: Select DCB Location Using Trackball

Objective: Change the location of the DCB by using the trackball to activate the function.

a) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Tools submenu.

c) Select the desired position of the Display Control Bar (DCB) by moving the cursor over one of the four DCB location buttons.

   1. DCB TOP
   2. DCB LEFT
   3. DCB RIGHT
   4. DCB BOTTOM

d) Press the left button on the trackball over the appropriate button to move the DCB to the desired location.

e) Observe that the DCB moved to the desired location and that it returned to the main DCB.

## Function 45: Local Aircraft /Vehicle Association Using Trackball

Objective: Associate stored local aircraft or vehicle data with a track using the trackball.

a) Use the trackball to move the cursor over the LOCAL 101-188 button on the Display Control Bar (DCB). (There are two LOCAL buttons. However, they simply take you to different parts of the same list. All parts of the local list are accessible using either button.)

b) Press the left button on the trackball to open the Local Aircraft and Vehicle list.

c) Use the trackball to move the cursor over the desired local aircraft or vehicle preset button on the Display Control Bar (DCB).

d) Press the left button on the trackball to activate the selected local aircraft or vehicle information.

e) Use the trackball to move the cursor over the desired track.

f) Press the left button on the trackball to associate the Local List data with the desired track.

g) Verify that the track is now identified with the selected local aircraft or vehicle information.

h) Use the trackball to move the cursor over the DONE button in the Local Aircraft and Vehicles submenu on the DCB.

i) Press the left button on the trackball to return to the main DCB.

j) Verify that the track is now identified with the selected local aircraft or vehicle information.

## Function 46: Local Aircraft /Vehicle Association Using Trackball and Keyboard

Objective: Associate stored local aircraft or vehicle data with a track using the keyboard.

a) Use the keyboard to select local aircraft and vehicle data from the list.

   1. Press the < INIT CNTL> key. (The < INIT CNTL> key is located over the < 3> key.)
   2. Type the desired Local List number (range 101 – 276)

b) Use the trackball to move the cursor over the desired track.

c) Press the left button on the trackball to associate the Local List data with the desired track.

d) Verify that the track is now identified with the selected local aircraft or vehicle information.

## Function 47: Local Aircraft /Vehicle Association Using Trackball and Keypad

Objective: Associate an aircraft/vehicle with information stored in the local list using the keypad.

a) Use the keypad to select local aircraft and vehicle data from the list.

   1. Press the < INIT CNTL> key. (The < INIT CNTL> key is located to the right of the < 3> key.)
   2. Type the desired Local List number (range 101 – 276)

b) Use the trackball to move the cursor over the desired track.

c) Press the left button on the trackball to associate the Local List data with the desired track.

d) Verify that the track is now identified with the selected local aircraft or vehicle information.

e) Use the trackball to move the cursor over the DONE button in the Local Aircraft and Vehicles submenu on the DCB.

f) Press the left button on the trackball to return to the main DCB.

## Function 48: Suspend a Track Using Trackball

Objective: Suspend a track using the trackball to activate the function and the trackball to select the track.

a) Use the trackball to move the cursor over the TRK SUSP button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Track Suspend function.

c) Use the trackball to move the cursor over the track you wish to suspend.

d) Press the left button on the trackball to suspend the selected track.

e) Verify that the track was suspended (The track icon should have a two-digit number instead of an aircraft icon, and the same number should appear in the Coast/Suspend list with the track's ACID)

## Function 49: Suspend a Track Using Keyboard

Objective: Suspend a track using the keyboard to activate the function and the trackball to select the track.

a) Use the keyboard to activate the Track Suspend function by pressing the < TRK SUSP> key. (The < TRK SUSP> key is located above the < 4> key.)

b) Use the trackball to move the cursor over the track you wish to suspend.

c) Press the left button on the trackball to suspend the selected track.

d) Verify that the track was suspended (The track icon should have a two-digit number instead of an aircraft icon, and the same number should appear in the Coast/Suspend list with the track's ACID)

## Function 50: Suspend a Track Using Keypad

Objective: Suspend a track using the keypad to activate the function and the trackball to select the track.

a) Use the keypad to activate the Track Suspend function by pressing the < TRK SUSP> key. (The < TRK SUSP> key is located to the right of the < 6> key.)

b) Use the trackball to move the cursor over the track you wish to suspend.

c) Press the left button on the trackball to suspend the selected track.

d) Verify that the track was suspended (The track icon should have a two-digit number instead of an aircraft icon, and the same number should appear in the Coast/Suspend list with the track's ACID)

## Function 51: Initiate Control on a Suspended Track Using the Trackball

Objective: Reassociate suspended data with a suspended track using the Trackball.

a) Use the trackball to move the cursor over the INIT CNTL button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the initiate control function.

c) Use the trackball to move the cursor over the desired track.

d) Press the left button on the trackball to reassociate the suspended data with the suspended track.

e) Verify that the track is no longer suspended. (The track icon should be either a plane or a vehicle)

## Function 52: Initiate Control on a Suspended Track Using the Trackball (Dwell Emphasis on Track)

Objective: Reassociate suspended data with a suspended track using the Trackball.

a) Use the trackball to move the cursor over the desired track.

b) Press the left button on the trackball to reassociate the suspended data with the suspended track.

c) Verify that the track is no longer suspended. (The track icon should be either a plane or a vehicle)

## Function 53: Initiate Control on a Suspended Track Using the Trackball (Dwell Emphasis on List)

Objective: Reassociate suspended data with a suspended track using the Trackball.

a) Use the trackball to move the cursor over the suspended information in the track coast/suspend list for the desired track.

b) Press the left button on the trackball to reassociate the suspended data with the suspended track.

c) Verify that the track is no longer suspended. (The track icon should be either a plane or a vehicle)

## Function 54: Initiate Control on a Suspended Track Using the Keyboard and Trackball

Objective: Reassociate suspended data with a suspended track using the Keyboard and Trackball.

a) Use the keyboard to initiate control on a suspended track

   1. Press the < INIT CNTL> key on the keyboard. (The < INIT CNTL> key is located over the < 3> key.)

b) Use the trackball to move the cursor over the desired track.

c) Press the left button on the trackball to reassociate the suspended data with the suspended track.

d) Verify that the track is no longer suspended. (The track icon should be either a plane or a vehicle)

## Function 55: Initiate Control on a Suspended Track Using the Keypad and Trackball

Objective: Reassociate suspended data with a suspended track using the Keypad and Trackball.

a) Use the keypad to initiate control on a suspended track

   1. Press the < INIT CNTL> key on the keypad. (The < INIT CNTL> key is located to the right of the < 3> key.)

b) Use the trackball to move the cursor over the desired track.

c) Press the left button on the trackball to reassociate the suspended data with the suspended track.

d) Verify that the track is no longer suspended. (The track icon should be either a plane or a vehicle)

## Function 56: Initiate Control on a Suspended Track Using the Trackball and Keyboard

Objective: Reassociate suspended data with a suspended track using the Trackball and keyboard.

a) Use the trackball to move the cursor over the INIT CNTL button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the initiate control function.

c) Use the keyboard to type the unique two-digit number of the suspended track. (The suspend number is located on the track icon and in the coast/suspend list.)

d) Observe the functional feedback in the preview area.

e) Press the < ENTER> key on the keyboard to reassociate the suspended data with the suspended track.

f) Verify that the track is no longer suspended. (The track icon should be either a plane or a vehicle)

## Function 57: Initiate Control on a Suspended Track Using the Trackball and Keypad

Objective: Reassociate suspended data with a suspended track using the Trackball and keypad.

a) Use the trackball to move the cursor over the INIT CNTL button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the initiate control function.

c) Use the keypad to type the unique two-digit number of the suspended track. (The suspend number is located on the track icon and in the coast/suspend list.)

d) Observe the functional feedback in the preview area.

e) Press the < ENTER> key on the keyboard to reassociate the suspended data with the suspended track.

f) Verify that the track is no longer suspended. (The track icon should be either a plane or a vehicle)

## Function 58: Initiate Control on a Suspended Track Using the Keyboard

Objective: Reassociate suspended data with a suspended track using the Keyboard.

a) Use the keyboard to initiate control on a suspended track

1. Press the < INIT CNTL> key on the keyboard. (The < INIT CNTL> key is located over the < 3> key.)
2. Use the keyboard to type the unique two-digit number of the suspended track. (The suspend number is located on the track icon and in the coast/suspend list.)

b) Observe the functional feedback in the preview area.

c) Press the < ENTER> key on the keyboard to reassociate the suspended data with the suspended track.

d) Verify that the track is no longer suspended. (The track icon should be either a plane or a vehicle)

## Function 59: Initiate Control on a Suspended Track Using the Keypad

Objective: Reassociate suspended data with a suspended track using the Keypad.

a) Use the keypad to initiate control on a suspended track

   1. Press the < INIT CNTL> key on the keypad. (The < INIT CNTL> key is located to the right of the < 3> key.)
   2. Use the keyboard to type the unique two-digit number of the suspended track. (The suspend number is located on the track icon and in the coast/suspend list.)

b) Observe the functional feedback in the preview area.

c) Press the < ENTER> key on the keyboard to reassociate the suspended data with the suspended track.

d) Verify that the track is no longer suspended. (The track icon should be either a plane or a vehicle)

## Function 60: Select Data Block Fields Using the Trackball

Objective: The user customizes data blocks in the active window.

a) Use the trackball to move the cursor over the DB FIELD button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Customize Data Block submenu.

c) Select Partial or Full data blocks

d) If you selected Full data blocks, then select from the following which fields you would like displayed in the data block

   1. Altitude
   2. Aircraft Type
   3. Sensor Coverage
   4. Heavy Indicator
   5. Paired Fix or Departure Gate information
   6. Velocity
   7. Scratchpad Areas

e) Verify that the Data Blocks in the active window display the correct fields

f) Use the trackball to move the cursor over the DONE button in the Customize Data Block submenu on the DCB.

g) Press the left button on the trackball to return to the main DCB.

## Function 61: Purging a Data Block Using the Trackball

Objective: The user will purge data block information from a track.

a) Use the trackball to move the cursor over the TERM CNTL button on the Display Control Bar (DCB).

b) Press the left button on the trackball to activate the Terminate Control function.

c) Use the trackball to move the cursor over the desired track.

d) Press the left button on the trackball to purge the data block information from the selected track.

e) Verify that the data block information for the track was purged. (The track icon should be the Unknown Icon)

## Function 62: Purging a Data Block Using the Keyboard and Trackball

Objective: The user will purge data block information from a track.

a) Use the keyboard to activate the Terminate Control function by pressing the < TERM CNTL> key. (The < TERM CNTL> key is located above the < 5> key.)

b) Use the trackball to move the cursor over the desired track.

c) Press the left button on the trackball to purge the data block information from the selected track.

d) Verify that the data block information for the track was purged. (The track icon should be the Unknown Icon)

## Function 63: Purging a Data Block Using the Keypad and Trackball

Objective: The user will purge data block information from a track.

a) Use the keypad to activate the Terminate Control function by pressing the < TERM CNTL> key. (The < TERM CNTL> key is located below the < 9> key.)

b) Use the trackball to move the cursor over the desired track.

c) Press the left button on the trackball to purge the data block information from the selected track.

d) Verify that the data block information for the track was purged. (The track icon should be the Unknown Icon)

## Function 64: Toggling all Data Blocks on/off in the Active Window using the Trackball and DCB

Objective: The user will toggle all the data blocks on/off in the Active Window using the trackball.

a) Use the trackball to move the cursor over the window that you wish to toggle data blocks on/off.

b) Press the left button on the trackball to select that window as the active secondary window.

c) Verify that the secondary window is now the active window. (The border around the window turns blue to indicate that the window is active)

d) Observe all data blocks in the active window are on.

e) Use the trackball to move the curser over the DB ON/OFF button.

f) Press the left button on the trackball to toggle the data blocks off in the active window.

g) Observe all data blocks in the active window are now off.

h) Use the trackball to move the curser over the DB ON/OFF button.

i) Press the left button on the trackball to toggle the data blocks on in the active window.

j) Observe all data blocks in the active window are now on.

## Function 65: Toggling Display Control Bar (DCB)

Objective: The user will toggle DCB on/off using the trackball.

a) Use the trackball to move the cursor over the DCB ON/OFF button on the DCB.

b) Press the left button on the trackball to toggle the DCB off.

c) Observe only the DCB ON/OFF and SYSTEM MODE & HEALTH DCB button are visible in the upper left hand corner of the display.

d) Use the trackball to move the cursor over the DCB ON/OFF button on the DCB.

e) Press the left button on the trackball to toggle the DCB on.

f) Observe the DCB is displayed in the last user selected position.

## Function 66: Checking the System Health

Objective: Identify and determine the health of the ASDE- X system.

a) Verify the system health is green (The system health indicator is located at the right end of the DCB when the DCB is in the TOP or BOTTOM location or the bottom of the DCB when the DCB is in the RIGHT or LEFT location)

## Function 67: Manually Editing a Data Block

Objective: Edit Data Block information for a track.

a) Use the trackball to move the cursor over the track whose data block information you wish to edit.

b) Press the right button on the trackball to edit the data block information for the selected track in the preview area.

c) Observe that the track's data block information is listed in the preview area.

d) Use the keyboard to highlight any of the editable data block fields by pressing the < TAB> key. (The < TAB> key is located to the left of the < Q> key.)

   1. Aircraft Identification (up to 8 characters)
   2. Beacon Code (up to 8 characters)
   3. Aircraft Category (1 character)
   4. Aircraft Type (up to 4 characters)
   5. Paired Fix or Departure Gate (up to 3 characters)
   6. Scratchpad Area 1 (up to 7 characters)
   7. Scratchpad Area 2 (up to 7 characters)

e) Once the desired field is highlighted, type the new value (Use the < BACKSPACE> key if you only want to clear the data from a field)

f) Repeat steps (d) and (e) until all fields are correct.

g) Press the < ENTER> key on the keyboard.

h) Verify that the updated data block information appears in the selected data block.

## Function 68: Toggle the Beacon Code

Objective: View the Beacon Code for the selected track

a) Use the keyboard to activate the View Beacon Code function

1. Press the < MULTI FUNC> key. (The < MULTI FUNC> key is located above the < 7> key.)
2. Press the < B> key.

b) Observe the feedback in the preview area.

c) Use the trackball to move the cursor over the track whose beacon code you wish to view.

d) Press the left button on the trackball to view the beacon code of the selected track for a given period of time.

e) Observe that the Aircraft Identification for the selected track has been replaced with a beacon code for a few seconds.

## Function 69: Edit Scratchpad Area 1 Using Keyboard

Objective: Replace data in Scratchpad Area 1 (on the left) Using the Keyboard to activate the function and the Trackball to select the track

a) Use the keyboard to activate the Alter Scratchpad Area 1 function

1. Press the < MULTI FUNC> key. (The < MULTI FUNC> key is located above the < 7> key.)
2. Press the < Y> key.

b) Use the Keyboard to type the data for Scratchpad Area 1 (up to 7 characters).

c) Observe the functional feedback in the Preview Area.

d) Use the trackball to move the cursor over the track whose scratchpad data you wish to alter.

e) Press the left button on the trackball to complete the function.

f) Verify that the scratchpad data that that you entered appears in the data block. (The scratchpad data timeshares with other data on line 2 of the data block.)

## Function 70: Edit Scratchpad Area 2 Using Keyboard

Objective: Replace data in Scratchpad Area 2 (on the right) using the keyboard to activate the function and the Trackball to select the track

a) Use the keyboard to activate the Alter Scratchpad Area 2 function

1. Press the < MULTI FUNC> key. (The < MULTI FUNC> key is located above the < 7> key.)
2. Press the < H> key.

b) Use the Keyboard to type the data for Scratchpad Area 2 (up to 7 characters).

c) Observe the functional feedback in the Preview Area.

d) Use the trackball to move the cursor over the track whose scratchpad data you wish to alter.

e) Press the left button on the trackball to complete the function.

f) Verify that the scratchpad data that that you entered appears in the data block. (Scratchpad data timeshares with other data on line 2 of the data block.)

## Function 71: Toggle Date and Time Using the Trackball

Objective: Display the date and time in the Coast/Suspend List

a) Verify that the Track Coast/Suspend list is toggled on.

b) Use the trackball to move the cursor over the TOOLS button on the Display Control Bar (DCB).

c) Press the left button on the trackball to open the Tools submenu.

d) Use the trackball to move the cursor over the DATE/TIME ON/OFF button on the DCB.

e) Press the left button on the trackball to toggle the date and time.

f) Verify that the date and time toggled (on/off). (The date and time appear in the title bar of the track coast/suspend list.)

## Function 72: Selecting Leader Line Direction Using Keypad

Objective: The user will select the direction of the leader lines in the active window using the keypad.

a) Use the keypad to select the desired leader line direction

1. Press the number on the keypad which corresponds to the desired direction for leader lines in the active window. (Each number has an arrow indicating the corresponding direction.)
2. Press the < ENTER> key on the keypad.

b) Verify that the direction of leader lines in the active window changed.

## Function 73: Selecting Leader Line Direction Using Trackball

Objective: The user will select the direction of the leader lines in the active window using the trackball.

a) Use the trackball to move the cursor near the edge of the main window. (The cursor will change to a directional arrow when you have moved close enough to the edge.)

b) Press the bottom button on the trackball to change the direction of leader lines to the selected direction.

c) Verify that the direction of leader lines in the active window changed.

## Function 74: Toggle the Data Block for a Track

Objective: Toggle a Data Block (on/off) for a single track using the trackball

a) Use the trackball to move the cursor over the track whose data block you wish to toggle.

b) Press the left button on the trackball to toggle (on/off) the data block for the track.

c) Observe that the data block for the selected track toggled (on/off).

## Function 75: Leader Line Direction for Single Track Using Keypad

Objective: Set the leader line direction for a single track using the keypad to select the direction and the trackball to select the track

a) Use the keypad to select the desired leader line direction (arrows are etched onto the number keys)

b) Use the trackball to move the cursor over the track whose leader line direction you wish to change.

c) Press the left button on the trackball to change the leader line direction for the track.

d) Observe that the leader line direction for the selected track changed.

## Function 76: Define a DB Off Area

Objective: The user will create data block off area polygon.

a) Use the trackball to move the cursor over the DB AREA button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Data Block Area submenu.

c) Use the trackball to move the cursor over the DEFINE DB OFF AREA button on the Display Control Bar (DCB).

d) Press the left button on the trackball to activate the Define Data Block Off Area function.

e) Use the trackball to define the Data Block Off Area polygon

1. Move the cursor to the point where a polygon vertex should be.

2. Press the left button on the trackball to anchor a polygon vertex.
3. Repeat steps 1 and 2 until all vertices are defined
4. Press the middle button on the trackball to close the Data Block Off Area polygon.

f) Verify that Data Blocks are turned off in the DB Off Area.

g) Use the trackball to move the cursor over the DONE button in the Data Block Areas submenu on the DCB.

h) Press the left button on the trackball to return to the main DCB.

## Function 77: Define a Data Block Trait Area

Objective: The user will create a data block trait area polygon and define the traits of tracks in the area.

a) Use the trackball to move the cursor over the DB AREA button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Data Block Area submenu.

c) Use the trackball to move the cursor over the DEFINE TRAIT AREA button on the Display Control Bar (DCB).

d) Press the left button on the trackball to activate the Define Data Block Trait Area function.

e) Use the trackball to define the Data Block Trait Area polygon

1. Move the cursor to the point where a polygon vertex should be.
2. Press the left button on the trackball to anchor a polygon vertex.
3. Repeat steps 1 and 2 until all vertices are defined
4. Press the middle button on the trackball to close the Data Block Trait Area polygon.

f) Use the trackball move the cursor to the DCB and define the traits of the current Data Block Trait Area polygon by adjusting the following parameters.

1. Full or Partial Data blocks
2. If you selected Full Data Blocks, then you may select the following data block fields to be displayed or not:
   i. Altitude
   ii. Aircraft Type
   iii. Sensor Coverage
   iv. Heavy Indicator

v. Paired Fix or Departure Gate information
vi. Velocity
vii. Scratchpad Areas

3. Data Block Character Size
4. Velocity Vector On/Off
5. Leader Line Length
6. Leader Line Direction

g) Use the trackball to move the cursor over the DONE button in the Define Data Block Trait Areas submenu on the DCB.

h) Press the left button on the trackball to return to the Data Block Areas submenu.

i) Use the trackball to move the cursor over the DONE button in the Data Block Areas submenu on the DCB.

j) Press the left button on the trackball to return to the main DCB.

## Function 78: Show All Data Block Areas

Objective: The user will show/hide all Data Block Areas.

a) Use the trackball to move the cursor over the DB AREA button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Data Block Area submenu.

c) Use the trackball to move the cursor over the SHOW ALL AREAS button on the Display Control Bar (DCB).

d) Press the left button on the trackball to toggle all data block areas (show/hide).

e) Verify that the data block areas toggled (DB Trait Areas are Green, DB Off Areas are Red).

f) Use the trackball to move the cursor over the DONE button in the Data Block Areas submenu on the DCB.

g) Press the left button on the trackball to return to the main DCB.

## Function 79: Delete All Data Block Areas

Objective: The user will delete all Data Block Areas.

a) Use the trackball to move the cursor over the DB AREA button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the Data Block Area submenu.

c) Use the trackball to move the cursor over the DELETE ALL AREAS button on the Display Control Bar (DCB).

d) Press the left button on the trackball to delete all data block areas.

e) Verify that all data block areas have been deleted.

f) Use the trackball to move the cursor over the DONE button in the Data Block Areas submenu on the DCB.

g) Press the left button on the trackball to return to the main DCB.

## Function 80: Save User Preference Set Using Trackball

Objective: Save the current display configuration as a user preference set. (The saved parameters in the fielded system will include window position, range scale in each window, character sizes, brightnesses, data block locations, data block trait area locations and properties, *etc*.)

a) Use the trackball to move the cursor over the PREF button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the User Preferences submenu.

c) Use the trackball to move the cursor over the SAVE AS button on the DCB.

d) Press the left button on the trackball to open the Save User Preference submenu.

e) Use the trackball to move the cursor over the text box to the left of the SET label on the DCB.

f) Press the left button on the trackball to activate the SET text box.

g) Use the keyboard to type your two-letter set of operating initials and the two-digit number of the desired preference set. (e.g., DG01, JL11, etc.)

h) Use the trackball to move the cursor over the PASSWORD text box on the DCB.

i) Press the left button on the trackball to activate the PASSWORD text box.

j) Use the keyboard to type the correct password for your user preferences.

k) Use the trackball to move the cursor over the TITLE text box on the DCB.

l) Press the left button on the trackball to activate the TITLE text box.

m) Use the keyboard to type the title of the desired preference set (up to seven characters).

n) Use the trackball to move the cursor over the OK button on the DCB.

o) Press the left button on the trackball to save the current display configuration as the identified preference set and return to the User Preferences submenu.

p) Verify that the preference set was saved (The title of the each defined user preference set is displayed on the second line of the preference set button).

q) Use the trackball to move the cursor over the DONE button in the User Preferences submenu on the DCB.

r) Press the left button on the trackball to return to the main DCB.

## Function 81: Select User Preference Set Using Trackball and Keyboard

Objective: From the Main DCB, select a previously-defined user preference set using the trackball to go to the User Preferences submenu, the keyboard to select the appropriate operating initials, and the trackball to select the previously-defined user preference set.

a) Use the trackball to move the cursor over the PREF button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the User Preferences submenu.

c) Use the trackball to move the cursor over the text box on the OP INITS button on the DCB.

d) Press the left button on the trackball to activate the text box on the OP INITS button.

e) Use the keyboard to delete the current operating initials and type your two-letter set of operating initials (or the three-digit number that corresponds to your operating initials) in the text box.

f) Use the keyboard to view the corresponding user preference sets by pressing the < ENTER> key.

g) Verify that the User Preferences submenu now displays the corresponding user preference sets (each preference button should display the selected operating initials and a two-digit number on the top line).

h) Use the trackball to move the cursor over the desired preference button in the User Preferences submenu on the DCB (only preference buttons which have been previously assigned a preference set will have a title on the second line).

i) Press the left button on the trackball to select the desired preference set.

j) Verify that the display settings changed.

k) Use the trackball to move the cursor over the DONE button in the User Preferences submenu on the DCB.

l) Press the left button on the trackball to return to the main DCB.

m) Verify that the desired user preference set has been selected (The title of the currently-selected user preference set is displayed on the second line of the PREF button).

## Function 82: Select User Preference Set Using Keyboard and Trackball

Objective: From the Main DCB, select a previously-defined user preference set using the keyboard to go to the User Preferences submenu, the keyboard to select the appropriate set of user preferences, and the trackball to select the previously-defined user preference set.

a) Use the keyboard to open the User Preferences submenu

   1. Press the < PREF SET> key (The < PREF SET> key is located over the < 1> key).

b) Use the trackball to move the cursor over the text box on the OP INITS button on the DCB.

c) Press the left button on the trackball to activate the text box on the OP INITS button.

d) Use the keyboard to delete the current operating initials and type your two-letter set of operating initials (or the three-digit number that corresponds to your operating initials) in the text box.

e) Use the keyboard to view the corresponding user preference sets by pressing the < ENTER> key.

f) Verify that the User Preferences submenu now displays the corresponding user preference sets (each preference button should display the selected operating initials and a two-digit number on the top line).

g) Use the trackball to move the cursor over the desired preference button in the User Preferences submenu on the DCB (only preference buttons which have been previously assigned a preference set will have a title on the second line).

h) Press the left button on the trackball to select the desired preference set.

i) Verify that the display settings changed.

j) Use the trackball to move the cursor over the DONE button in the User Preferences submenu on the DCB.

k) Press the left button on the trackball to return to the main DCB.

l) Verify that the desired user preference set has been selected (The title of the currently-selected user preference set is displayed on the second line of the PREF button).

## Function 83: Select User Preference Set Using Keyboard and Trackball

Objective: From the Main DCB, select a previously-defined user preference set using the keyboard to go to the appropriately identified set of User Preferences, and the trackball to select the previously-defined user preference set.

a) Use the keyboard to open the User Preferences submenu to the desired set of preferences

1. Press the < PREF SET> key (The < PREF SET> key is located over the < 1> key).
2. Type your two-letter set of operating initials (or the three-digit number that corresponds to your operating initials).
3. Observe the functional feedback in the preview area.
4. Press the < ENTER> key.

b) Verify that the User Preferences submenu now displays the corresponding user preference sets (each preference button should display the selected operating initials and a two-digit number on the top line).

c) Use the trackball to move the cursor over the desired preference button in the User Preferences submenu on the DCB (only preference buttons which have been previously assigned a preference set will have a title on the second line).

d) Press the left button on the trackball to select the desired preference set.

e) Verify that the display settings changed.

f) Use the trackball to move the cursor over the DONE button in the User Preferences submenu on the DCB.

g) Press the left button on the trackball to return to the main DCB.

h) Verify that the desired user preference set has been selected (The title of the currently-selected user preference set is displayed on the second line of the PREF button).

## Function 84: Select User Preference Set Using Keyboard

Objective: From the Main DCB, select a previously-defined user preference set using the keyboard to select the previously-defined user preference set.

a) Use the keyboard to open the User Preferences submenu to the desired set of preferences

1. Press the < PREF SET> key (The < PREF SET> key is located over the < 1> key).
2. Type your two-letter set of operating initials (or the three-digit number that corresponds to your operating initials).
3. Type the two-digit number of the desired preference set.
4. Observe the functional feedback in the preview area.
5. Press the < ENTER> key.

b) Verify that the display settings changed.

c) Verify that the desired user preference set has been selected (The title of the currently-selected user preference set is displayed on the second line of the PREF button).

## Function 85: Select User Preference Set Using Keypad

Objective: From the Main DCB, select a previously-defined user preference set using the keyboard to select the previously-defined user preference set.

a) Use the trackball to move the cursor over the PREF button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the User Preferences submenu.

c) Use the trackball to move the cursor over the text box on the OP INITS button on the DCB.

d) Press the left button on the trackball to activate the text box on the OP INITS button.

e) Use the keypad to type the three-digit number (which corresponds to your two-letter set of operating initials) in the text box.

f) Use the keypad to view the corresponding user preference sets by pressing the < ENTER> key.

g) Verify that the User Preferences submenu now displays the corresponding user preference sets (each preference button should display the selected operating initials and a two-digit number on the top line).

h) Use the trackball to move the cursor over the desired preference button in the User Preferences submenu on the DCB (only preference buttons which have been previously assigned a preference set will have a title on the second line).

i) Press the left button on the trackball to select the desired preference set.

j) Verify that the display settings changed.

k) Use the trackball to move the cursor over the DONE button in the User Preferences submenu on the DCB.

l) Press the left button on the trackball to return to the main DCB.

m) Verify that the desired user preference set has been selected (The title of the currently-selected user preference set is displayed on the second line of the PREF button).

## Function 86: Delete User Preference Set Using Trackball

Objective: Delete a previously-defined user preference set.

a) Use the trackball to move the cursor over the PREF button on the Display Control Bar (DCB).

b) Press the left button on the trackball to open the User Preferences submenu.

c) Use the trackball to move the cursor over the DELETE button on the DCB.

d) Press the left button on the trackball to open the Delete User Preference submenu.

e) Use the trackball to move the cursor over the text box to the left of the SET label on the DCB.

f) Press the left button on the trackball to activate the SET text box.

g) Use the keyboard to type your two-letter set of operating initials and the two-digit number of the desired preference set. (e.g., DG01, JL11, etc.)

h) Use the trackball to move the cursor over the PASSWORD text box on the DCB.

i) Press the left button on the trackball to activate the PASSWORD text box.

j) Use the keyboard to type the correct password for your user preferences.

k) Use the trackball to move the cursor over the OK button on the DCB.

l) Press the left button on the trackball to delete the selected display configuration and return to the User Preferences submenu.

m) Verify that the preference set was deleted (The second line of each undefined preference set button is blank).

n) Use the trackball to move the cursor over the DONE button in the User Preferences submenu on the DCB.

o) Press the left button on the trackball to return to the main DCB.

# APPENDIX B

## USABILITY SCRIPTS

The EUIE included five usability scripts that the participants completed during the usability sessions. The usability scripts are more general than the hands-on scripts. They identify a function to perform and specify the method, but they do not identify the steps required to complete the function. Scripts 1-3 systematically cover the ASDE-X functions available in the ASDE-X computer model. Script 4 contains a subset of items from Scripts 1-3. It is designed to evaluate the effect of an alternative monitor location on usability. Script 5 investigates the usability of alternative hardware input devices. Scripts 1, 4, and 5 include day and night versions to accommodate the different settings required by the brightness function. For these scripts, the relevant item includes both the day and night versions along with a title. During the EUIE, the participants completed a questionnaire focusing on aspects of the interface just exercised immediately following each script. The research team used Scripts 1-4 for Week 2 of the EUIE. These scripts identify the functions using the keyboard, trackball, and keypad. The Week 1 scripts were similar but did not exercise the keypad.

The scripts include the use of preference sets. The ASDE-X model enabled the users to save up to 32 preference sets. Preference sets provide a quick method to invoke previously saved display settings defining the brightness, font, data block, map window, and other characteristics. Each preference set is identified using the controller's unique 2-letter identifier (i.e., their operating initials) or associated 3-digit identifier followed by a preference set number (i.e., 01-32). The user must enter their password to save a preference set. For example, step 11 of Script 2 instructs the participants to invoke the user preference set function and save their current display settings as **###02 LL Script2**. In this example, **###** represents the 3 digit number associated with their operating initials, **02** is the preference set number, **LL** is their password, and **Script2** is the title for the saved preference set. A similar convention is used for all scripts.

Participant Code _____

## ASDE-X Script 1

### Instructions

1. Perform each function in the order it is presented.
2. Read each item carefully and check in the box provided as you complete the item.
3. If you do not understand an item, ask the usability coordinator for clarification.
4. If you have difficulty completing a function, you may refer to your training scripts.
5. Use the space provided to capture any notes so you can refer to them later.

**The research team will collect this form after the caucus so you will have your notes to reference.**

# ASDE-X EUIE Script 1

1. Toggle the Day/Night Color Palette

- ❑ Use the **trackball** to change to the **alternate palette**
  - Observe the alternate palette colors
- ❑ Use the **keyboard** to change to the **alternate palette**
  - Observe the alternate palette colors
- ❑ Use the **keypad** to toggle the **color palette** and then set it to your assigned condition

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2. Adjust Cursor Speed

- ❑ Use the **trackball** to activate the **Adjust Cursor Speed** function
  - Use the **trackball** to set the cursor speed to **10**
  - Exit the function
  - Move the cursor across the display to observe the new setting
- ❑ Use the **trackball** to activate the **Adjust Cursor Speed** function
  - Use the **keyboard** to set the cursor speed to **1**
  - Exit the function
  - Move the cursor across the display to observe the new setting
- ❑ Use the **trackball** to activate the **Adjust Cursor Speed** function
  - Use the **keypad** to set the cursor speed to **your preferred setting (1-10)**
  - Exit the function
  - Move the cursor across the display to observe the new setting

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3.__Map Rotation Function

- ❑ Use the **trackball** to activate the **Map Rotation** function
  - Use the **trackball** to rotate the map **90 degrees** in either direction
  - Use the **keyboard** to rotate the map to **180 degrees**
- ❑ Use the **trackball** to activate the **Map Rotation** function
  - Use the **keypad** to rotate the map to **0 degrees**

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4.__Map Reposition Function

- ❑ Use the **trackball** to activate the **Map Reposition** function
  - Use the **trackball** to move the map to the **right half** of the display
  - Exit the function
- ❑ Use the **keyboard** to activate the **Map Reposition** function
  - Use the **trackball** to move the map to the **left half** of the display
  - Use the **trackball** to move the map to **center** the traffic on the display
  - Exit the function

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5.__Range Function

- ❑ Use the **trackball** to activate the **Range** function
  - Use the **keyboard** to adjust the range to **60,000 feet** (600 on the range button)
- ❑ Use the **trackball** to activate the **Range** function
  - Use the **keypad** to adjust the range to **300 feet** (3 on the range button)
- ❑ Use the **trackball** to activate the **Range** function and adjust it so that you can view the entire map (approx. 20,000 feet [200 on the range button]. You may need to reposition the map).

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# ITEM 6—DAY VERSION

6. Adjust Brightness Settings

- ❑ Turn on History Trails and set the length to **5**
- ❑ Use the **Brightness** knob on the monitor to adjust through the full range of settings
  - Set the brightness arrow pointing toward the "T" in "Brightness"
- ❑ Use the **trackball** to activate the **Brightness** function
  - Use the **trackball** to scroll through the entire BAKGND1 brightness settings range (0 to 100)
  - Use the **keyboard** to set the BAKGND1 brightness settings to **65**
  - Use the **trackball** to scroll through the entire BAKGND2 brightness settings range (**0 to 100)**
  - Use the **keypad** to set the BAKGND2 brightness settings to **40**
  - Use the **trackball** to scroll through the entire APRON brightness settings range (**0 to 100)**
  - Use the **keyboard** to set the APRON brightness settings to **60**
  - Use the **trackball** to scroll through the entire LISTS brightness settings range (**0 to 100)**
  - Use the **keypad** to set the LISTS brightness settings to **60**
  - Use the **trackball** to scroll through the entire TAXIWAY brightness settings range (**0 to 100)**
  - Use the **keypad** to set the TAXIWAY brightness settings **65**
  - Use the **trackball** to scroll through the entire TARGET ICONS brightness settings range (**0 to 100)**
  - Use the **keyboard** to set the TARGET ICONS brightness settings to **100**
  - Use the **trackball** to scroll through the entire DATA BLOCKS brightness settings range (**0 to 100)**
  - Use the **keypad** to set the DATA BLOCKS brightness settings to **80**
  - Use the **trackball** to scroll through the entire DCB brightness settings range (**0 to 100)**
  - Use the **keyboard** to set the DCB brightness settings to **85**
  - Use the **trackball** to scroll through the entire HISTORY TRAILS brightness settings range (**0 to 100)**
  - Use the **keypad** to set the HISTORY TRAILS brightness settings **95**
- ❑ Review the brightness settings and adjust any to **your preferred settings**
  - Exit the function

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# ITEM 6—NIGHT VERSION

6. Adjust Brightness Settings

- ❑ Turn on History Trails and set the length to **5**
- ❑ Use the **Brightness** knob on the monitor to adjust through the full range of settings
  - Set the brightness arrow pointing toward the "T" in "Brightness"
- ❑ Use the **trackball** to activate the **Brightness** function
  - Use the **trackball** to scroll through the entire BAKGND2 brightness settings range (**0 to 100)**
  - Use the **keypad** to set the BAKGND2 brightness settings to **55**
  - Use the **trackball** to scroll through the entire APRON brightness settings range (**0 to 100)**
  - Use the **keyboard** to set the APRON brightness settings to **90**
  - Use the **trackball** to scroll through the entire LISTS brightness settings range (**0 to 100)**
  - Use the **keypad** to set the LISTS brightness settings to **50**
  - Use the **trackball** to scroll through the entire RUNWAY brightness settings range (**0 to 100)**
  - Use the **keyboard** to set the RUNWAY brightness settings **40**
  - Use the **trackball** to scroll through the entire TAXIWAY brightness settings range (**0 to 100)**
  - Use the **keypad** to set the TAXIWAY brightness settings **30**
  - Use the **trackball** to scroll through the entire TARGET ICONS brightness settings range (**0 to 100)**
  - Use the **keyboard** to set the TARGET ICONS brightness settings to **95**
  - Use the **trackball** to scroll through the entire DATA BLOCKS brightness settings range (**0 to 100)**
  - Use the **keypad** to set the DATA BLOCKS brightness settings to **60**
  - Use the **trackball** to scroll through the entire DCB brightness settings range (**0 to 100)**
  - Use the **keyboard** to set the **DCB** brightness settings to **70**
  - Use the **trackball** to scroll through the entire HISTORY TRAILS brightness settings range (**0 to 100)**
  - Use the **keypad** to set the HISTORY TRAILS brightness settings **80**
- ❑ Review the brightness settings and adjust any to **your preferred settings**
  - Exit the function

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7.__Adjust Character Size

- ❑ Use the **trackball** to activate the **Character Size** adjustment function
- ❑ Use the **trackball** to select the DATA BLOCK character size adjustment
  - Use the **trackball** to scroll through the entire DATA BLOCK range (**1 – 6**)
  - Use the **keyboard** to adjust the DATA BLOCK to **3**
- ❑ Use the **trackball** to select the DCB character size adjustment
  - Use the **trackball** to scroll through the entire range (**1 – 3**)
  - Use the **keypad** to adjust the DCB to **2**
- ❑ Use the **trackball** to select the COAST SUSPEND character size adjustment
  - Use the **trackball** to scroll through the entire range (**1 – 6**)
  - Use the **keyboard** to adjust the COAST SUSPEND to **2**
- ❑ Use the **trackball** to select the PREVIEW AREA character size adjustment
  - Use the **trackball** to scroll through the entire range (**1 – 6**)
  - Use the **keypad** to adjust the PREVIEW AREA to **4**
- ❑ Review the character sizes and adjust any to **your preferred settings**
  *(Note: the other character size adjustments are not working in the computer model)*
  - Exit the character size adjustment function

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8.__Adjust Leader Line Length

- ❑ Use the **trackball** to activate the **Leader Line Length** function
  - Use the **trackball** to adjust the Leader Line Length through the entire range (**0 to 9**)
  - Use the **keypad** to set the Leader Line Length to **4**
- ❑ Use the **keyboard** (implied function) to adjust the Leader Line Length to **2**
- ❑ Adjust the Leader Line Length to **your preferred setting**
- ❑ Use the **keyboard** (implied function) to adjust the Leader Line Length for a **single target**

Notes: _____

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9.__ Adjust Leader Line Direction

- ❑ Use the **keyboard** (implied function) to adjust the **Leader Line Direction** to the following 8 positions: **7, 8, 9, 6, 4, 1, 2, 3**
- ❑ Use the **trackball** (implied function) to adjust the Leader Line Direction to all 8 positions
- ❑ Use the **keypad** (implied function) to adjust the Leader Line Direction to the following 8 positions: **7, 8, 9, 6, 4, 1, 2, 3**
- ❑ Adjust the leader line direction to **your preferred setting**
- ❑ Use the **keyboard** (implied function) to adjust the Leader Line Direction for a **single target**
- ❑ Use the **keypad** (implied function) to adjust the Leader Line Direction for a **single target**

Notes: _____

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10.__ Save User Preference Set Function

- ❑ Use the **keyboard** to activate the **User Preference** function
  - Use the **trackball** to save the current display preferences
  - Use the **keyboard** to enter the preference SET as **LL01**
    (*Note: LL stands for your operating initials*)
  - Use the **keyboard** to enter your PASSWORD **LL**
  - Use the **keyboard** to enter the preference set TITLE as **Script1**
  - Exit the User Preferences submenu

Notes: _____

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Participant Code _____

## ASDE-X Script 2

### Instructions

1. Perform each function in the order it is presented.
2. Read each item carefully and check in the box provided as you complete the item.
3. If you do not understand an item, ask the usability coordinator for clarification.
4. If you have difficulty completing a function, you may refer to your training scripts.
5. Use the space provided to capture any notes so you can refer to them later.

**The research team will collect this form after the caucus so you will have your notes to reference.**

# ASDE-X EUIE Script 2

1. Select User Preference Set and Home Function

- ❑ Use the **trackball** to activate the **User Preference** function
  - Use the **keypad** to select set **01104** (it is titled **SC2Q1**)
  - Exit and observe the changes to the display
- ❑ Use the **trackball** to select HOME (the display will return to its original settings)
- ❑ Use the **keyboard** to activate the **User Preference** function
  - Use the **keyboard** to enter **your two-letter set** of operating initials (LL)
  - Use the **trackball** to select the **LL01** User Preference Set
  - Exit the function and observe the changes to the display
- ❑ Use the **trackball** to activate the **Adjust Cursor Speed** function
  - Use the **keyboard** to set the cursor speed to **your preferred setting (1-10)**
  - Exit the function

Notes: _____

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2. Activate Vector Lines and Adjust Vector Length

- ❑ Use the **trackball** to toggle the **Vector Lines** on and off
  - Verify vector lines change based on selection
  - Set the vector lines to **on**
- ❑ Use the **trackball** to activate the **Adjust Vector Length** function
  - Use the **trackball** to adjust the vector lengths through the entire range (1-20)
  - Use the **keypad** to set the vector lengths to **13**
- ❑ Use the **trackball** to activate the **Adjust Vector Length** function
  - Use the **keyboard** to set the vector lengths to **5**
  - Set the vector lengths to **your preferred setting, but > 4**
  - Exit the **Adjust Vector Length** function

Notes: _____

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3. Activate History Trails and Adjust History Trail Length

- ❑ Use the **trackball** to set the **Range** to **18,000** feet (180 on the display)
- ❑ Use the **trackball** to turn **History Trails** in the main window **on**
- ❑ Use the **trackball** to **Adjust History Trail Length** through the entire range (1-5)
  - Use the **keypad** to set the history trails to **2**
- ❑ Use the **trackball** to activate the **Adjust History Trail Length** function
  - Use the **keyboard** to set the history trails to **5**
  - Exit the function
- ❑ Use the **keyboard** multifunction command to set the history trails to **3**
- ❑ Use the **trackball** to turn history trails in the main window **off** and **on**
- ❑ Turn the history trails on or off according to **your preference**

Notes: _____

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4. Reposition Preview Area

- ❑ Use the **trackball** to activate the **Preview Reposition** function
  - Use the **trackball** to move the preview area
  - Exit the function
- ❑ Use the **keyboard** multifunction command to activate the **Preview Reposition** function
  - Use the **trackball** to move the preview area
  - Exit the function

Notes: _____

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5. Toggle Track Coast/Suspend List (on/off)

- ❑ Use the **trackball** to turn the **Coast/Suspend List off**
- ❑ Use the **keyboard** multifunction command to toggle the Coast/Suspend List **on**

Notes: _____

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6. Reposition Track Coast/Suspend List

- ❑ Use the **trackball** to activate the **Reposition Coast/Suspend List** function
  - Use the **trackball** to move the Coast/Suspend List to the **lower right** of the display
  - Use the **trackball** to move the Coast/Suspend List to **your preferred location**

Notes: _____

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7. Toggle the DCB menu on/off

- ❑ Use the **trackball** to toggle the **DCB menu off**
- ❑ Use the **trackball** to toggle the **DCB menu on**

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8. Select DCB Location

- ❑ Use the **trackball** to move the DCB to the **bottom** of the display
- ❑ Use the **trackball** to move the DCB to the **left** of the display
- ❑ Use the **trackball** to move the DCB to the **right** of the display
- ❑ Use the **trackball** to move the DCB to **your preferred location** on the display
  - Exit the function

Notes: _____

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9. Create and manipulate a New Window

- ❑ Use the **keyboard** to activate the create a **New Window** (Window 2) function
  - Use the **trackball** to move Window 2 to the **upper right corner** of the display
  - Use the **trackball** to resize the new window (Window 2) to a square with sides of about **5 inches**
  - Use the **trackball** to select the **Map Reposition** function
  - Use the **trackball** to reposition the map so that the holding area is in the **middle** of the display
  - Use the **keypad** to adjust the range in Window 2 to **5000** feet (50 on the display)
  - Use the **keyboard** to toggle the Data Blocks **off** and **on** in Window 2
  - Use the **trackball** to set the Data Blocks to **partial** in Window 2
  - Use the **trackball** to change the leader line direction to the **upper left**
- ❑ Use the **trackball** to activate the create a **New Window** (Window 3) function
  - Move the new window **beneath Window 2**
  - Use the **trackball** to resize this window (Window 3) to a rectangle with sides of about **8 inches high and 5 inches wide**
  - Use the **trackball** to reposition the map to show the three 17-35 runways with traffic
  - Use the **trackball** to adjust the range in Window 3 to **15000** feet (150 on the display)
  - Use the **trackball** to toggle the Data Blocks **off** and **on** in Window 3
  - Use the **trackball** to set the Data Blocks to **partial** in Window 3
  - Use the **keyboard** (implied function) to adjust the Leader Line Direction to **the right**
  - Use the **keypad** (implied function) to adjust the Leader Line Direction to **the lower right**

Notes: _____

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10. Delete Secondary Window

- ❑ Use the **trackball** to **Delete** Window 3

Notes: _____

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11. Save User Preference Set Function

- ❑ Use the **keyboard** to activate the **User Preference** function
  - Use the **trackball** to save the current display configuration
  - Use the **keypad** to enter the preference set as **###02**
    *(### is the 3 digit number associated with your operating initials)*
  - Use the **keyboard** to enter your password **LL**
  - Use the **keyboard** to enter the preference set title as **Script2**
  - Use the **trackball** to exit the **User Preference** submenu

Notes: _____

Participant Code _____

## ASDE-X Script 3

### Instructions

1. Perform each function in the order it is presented.
2. Read each item carefully and check in the box provided as you complete the item.
3. If you do not understand an item, ask the usability coordinator for clarification.
4. If you have difficulty completing a function, you may refer to your training scripts.
5. Use the space provided to capture any notes so you can refer to them later.

**The research team will collect this form after the caucus so you will have your notes to reference.**

# ASDE-X EUIE Script 3

1. Select User Preference Set Function

❑ Use the **keyboard** to activate the **User Preference** function

- Use the **keyboard** to enter **your two-letter set** of operating initials (LL)
- Use the **trackball** to select the **LL02** User Preference Set
- Exit the **User Preference** function

Notes: _____

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2. Toggle all Data Blocks on/off in the main window

❑ Use the **keyboard** to toggle the data blocks in the main window **off**

- Use the **keyboard** to toggle the data blocks in the main window **on**

❑ Use the **trackball** to toggle the data blocks in the main window **off**

- Use the **trackball** to toggle the data blocks in the main window **on**

Notes: _____

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3. Toggle an Individual Data block

❑ Use the **trackball** to toggle an individual data block **off**

❑ Use the **trackball** to toggle the data block **on**

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4. Customize Data Blocks (Partial/Full)

- ❑ Use the **trackball** to activate the **DB Field** function
- ❑ Use the **trackball** to set each of the following to the assigned setting:
  - Data blocks on **FULL**
  - Velocity **off**
  - Paired Fix or Departure Gate **off**
  - Altitude **off**
  - Sensor Coverage **off**
  - Heavy Indicator **on**
  - Aircraft Type **on**
  - Scratchpad Areas **on**
  - Exit the **DB Field** function

Notes: _____

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5. Manually Edit a Data Block

- ❑ Use the **trackball** to select a regular aircraft target
  - Use the **keyboard** to change the aircraft category to **H**
  - Use the **keyboard** to change the aircraft type to **B747**
  - Exit the edit function
- ❑ Verify that the aircraft type is **B747** and the icon category is a **heavy**

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6. Local Aircraft /Vehicle Association

- ❑ Use the **trackball** to activate the **Local Aircraft /Vehicle Association** function
  - Use the **trackball** to select the local vehicle **101** data on the DCB
  - Use the **trackball** to associate the local vehicle information with a target
  - Use the **trackball** to exit the **Local Aircraft /Vehicle Association** function
- ❑ Use the **keyboard** to activate the **Initiate Control** function
  - Use the **keyboard** to enter **102** (to select the data for local vehicle 102)
  - Use the **trackball** to associate the local vehicle information with a target
- ❑ Use the **keypad** to activate the **Initiate Control** function
  - Use the **keypad** to enter **117** (to select the data for local vehicle 117)
  - Use the **trackball** to associate the local vehicle information with a target

Notes: _____

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7. Suspend a Track

- ❑ Use the **trackball** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list
- ❑ Use the **keyboard** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list
- ❑ Use the **keypad** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list
- ❑ Suspend one additional track and verify

Notes: _____

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8. Initiate Control of a Suspended Track

- ❑ Use the **trackball** to activate the **Initiate Control** function
  - Use the **trackball** to reassociate a suspended data with a track by slewing to the track
  - Verify that the track is no longer suspended
- ❑ Use the **keyboard** to activate the **Initiate Control** function
  - Use the **keyboard** to enter a **suspended track id** and reassociate the suspended data with a track
  - Verify that the track is no longer suspended
- ❑ Use the **keypad** to activate the **Initiate Control** function
  - Use the **keypad** to enter a **suspended track id** and reassociate the suspended data with a track
  - Verify that the track is no longer suspended
- ❑ Use the **trackball** to move the cursor to the Coast/Suspend list and reassociate the suspended target with the remaining track
  - Verify that the track is no longer suspended

Notes: _____

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9. Terminate Control of a Track

- ❑ Use the **trackball** to activate the **Terminate Control** function
  - Use the **trackball** to terminate control of a track on the display
  - Verify that the data block disappears from the display and the target becomes unknown
- ❑ Use the **keyboard** to activate the **Terminate Control** function
  - Use the **trackball** to terminate control of a track on the display
  - Verify that the data block disappears from the display and the target becomes unknown
- ❑ Use the **keypad** to activate the **Terminate Control** function
  - Use the **trackball** to terminate control of a track on the display
  - Verify that the data block disappears from the display and the target becomes unknown

Notes: _____

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11. Define a DB Off Area

- ❑ Verify that data blocks are on in the main window. If not, toggle them on and set to **partial**
- ❑ Use the **trackball** to activate the **DB Area** function
  - Use the **trackball** to select the **Define DB Off Area** function
  - Use the **trackball** to define a Data Block Off Area polygon (make a rectangle near the main terminal area)
  - Exit the **DB Area** function
  - Observe the data block area

Notes: _____

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12. Define a Trait Area

- ❑ Toggle the data blocks off in the main window and delete any secondary windows
- ❑ Use the **trackball** to activate the **DB Area** function
- ❑ Use the **trackball** to activate the **Define Trait Area** function
  - Use the **trackball** to define a Trait Area polygon (make a rectangle around the holding area)
  - Use the **trackball** to select **Partial** data blocks
  - Use the **trackball** to select the **Data Block Character Size** function
  - Use the **trackball** to set the Data Block Character Size to **3**
  - Use the **trackball** to select the **Leader Line Direction** function
  - Use the **keyboard** to set the Leader Line Direction to the **upper left position**
  - Use the **trackball** to select the **Leader Line Length** function
  - Use the **keypad** to set the Leader Line Length to **2**
  - Use the **trackball** to toggle the Velocity Vector **On**
  - Exit the function
- ❑ Use the **trackball** to activate the **Define Trait Area** function
  - Use the **trackball** to define a second Data Block Trait Area polygon (Data Block Trait Area 2) (make a polygon near the end of a runway)
  - Use the **trackball** to select **Full** data blocks
  - Toggle the Fix **off**
  - Toggle the Altitude **off**
  - Toggle the Sensors **off**
  - Exit the **DB Area** function

Notes: _____

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13. Show All Data Block Areas

- ❑ Use the **trackball** to activate the **DB Area** function
  - Use the **trackball** to activate the **Show Areas** function
  - Use the **trackball** to toggle the areas off and on
  - Exit the **DB Area** function

Notes: _____

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14. Delete All Data Block Areas

- ❑ Use the **trackball** to activate the **DB Area** function
  - Use the **trackball** to **delete all areas**
  - Exit the **DB Area** function

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15. Enter information into the Scratch Pad

- ❑ Turn data blocks **on** in the main window
  - Use the **trackball** to activate the **Data Block** field function
  - Select Full data blocks with callsign, heavy, aircraft type, and scratchpad **on**
- ❑ Use the **keyboard** (multifunction) to enter **EMERG** into scratchpad area 1 for a target
- ❑ Use the **trackball** to enter **HIJACK** into scratchpad area 2
- ❑ Turn off the scratchpad areas

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16. Create and manipulate a New Window

❑ Use the **keyboard** to create a new window (Window 2)

- Adjust the map position and range to view the **right half** of the airport
- Use the **trackball** to set the data blocks to **partial**
- Use the **keypad** to adjust the leader line direction in Window 2 to the **lower left**
- Use the **trackball** to adjust the leader line length in Window 2 to **1**
- Use the **trackball** to select the character size function
- Use the **keyboard** to adjust the data block character size in Window 2 to **3**
- Use the **trackball** to toggle the Velocity Vectors in Window 2 **on** and **off**
- Use the **trackball only (not the DCB)** to reposition the window to the upper right corner

Notes: _____

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17. Save User Preference Set Function

❑ Use the **trackball** to activate the **User Preference** function

- Use the **trackball** to save the current display configuration
- Use the **keypad** to save the preference set as **###03**
- Use the **keyboard** to enter your password **LL**
- Use the **keyboard** to enter the preference set title as **Script3**
- Use the **trackball** to exit the User Preferences submenu

Notes: _____

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Participant Code _____

## ASDE-X Script 4

### Instructions

1. Perform each function in the order it is presented.
2. Read each item carefully and check in the box provided as you complete the item.
3. If you do not understand an item, ask the usability coordinator for clarification.
4. If you have difficulty completing a function, you may refer to your training scripts.
5. Use the space provided to capture any notes so you can refer to them later.

**The research team will collect this form after the caucus so you will have your notes to reference.**

# ASDE-X EUIE Script 4

1. Select User Preference Set and Home Function

- ❑ Use the **trackball** to activate the **User Preference** function
  - Use the **keypad** to select the set **01115** titled **SC4Q1**
  - Exit and observe the changes to the display
- ❑ Use the **trackball** to select **HOME** (the display will return to its original settings)
- ❑ Use the **keyboard** to activate the **User Preference** function
  - Use the **keyboard** to select the **LL03** User Preference Set
  - Exit the **User Preference** function
- ❑ Observe the changes to the display

Notes: _____

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2. Adjust Cursor Speed

- ❑ Use the **trackball** to activate the **Adjust Cursor Speed** function
  - Use the **trackball** to set the cursor speed to **10**
  - Move the cursor across the display to observe the new setting
- ❑ Use the **trackball** to activate the **Adjust Cursor Speed** function
  - Use the **keyboard** to set the cursor speed to **1**
  - Move the cursor across the display to observe the new setting
- ❑ Use the **trackball** to activate the **Adjust Cursor Speed** function
  - Use the **keypad** to set the cursor speed to **your preferred setting (1-10)**
  - Move the cursor across the display to observe the new setting

Notes: _____

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3. Map Reposition Function

- ❑ Use the **trackball** to activate the **Map Reposition** function
  - Use the **trackball** to move the map to the **right half** of the display
  - Exit the function
- ❑ Use the **keyboard** to activate the **Map Reposition** function
  - Use the **trackball** to move the map to the **left half** of the display
  - Use the **trackball** to move the map to **center** the traffic on the display
  - Exit the function

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4. Range Function

- ❑ Use the **trackball** to activate the **Range** function
  - Use the **keyboard** to adjust the range to **60,000 feet** (600 on the range button)
- ❑ Use the **trackball** to activate the **Range** function
  - Use the **keypad** to adjust the range to **7,500 feet** (75 on the range button)
- ❑ Use the **trackball** to activate the **Range** function
  - Use the **trackball** to adjust the range to **20,000 feet** (200 on the range button). You may need to reposition the map.

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# ITEM 5—DAY VERSION

5. Adjust Brightness Settings

- ❑ Use the **trackball** to activate the **Brightness** function
  - Use the **trackball** to set the TAXIWAY brightness settings **60**
  - Use the **keyboard** to set the TARGET ICONS brightness settings to **90**
  - Use the **keypad** to set the DATA BLOCKS brightness settings to **70**
- ❑ Review the brightness settings and adjust any as necessary

Notes: _____

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# ITEM 5—NIGHT VERSION

5. Adjust Brightness Settings

- ❑ Use the **trackball** to activate the **Brightness** function
  - Use the **trackball** to set the TAXIWAY brightness settings **40**
  - Use the **keyboard** to set the TARGET ICONS brightness settings to **85**
  - Use the **keypad** to set the DATA BLOCKS brightness settings to **50**
- ❑ Review the brightness settings and adjust any as necessary

Notes: _____

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6. Adjust Character Size

- ❑ Use the **trackball** to activate the **character size adjustment** function
- ❑ Use the **trackball** to select the Data Blocks character size adjustment
  - Use the **trackball** to scroll through the entire DATA BLOCK range (1-6)
  - Use the **keyboard** to adjust the DATA BLOCK to **2**
- ❑ Use the **trackball** to select the COAST SUSPEND character size adjustment
  - Use the **trackball** to scroll through the entire COAST SUSPEND range (1-6)
  - Use the **keypad** to adjust the COAST SUSPEND to **2**
- ❑ Use the **trackball** to adjust the character sizes to **your preferred settings**
  - Use the **trackball** to exit the character size adjustment function

Notes: _____

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7. Adjust Leader Line Direction

- ❑ Use the **keyboard** (implied function) to adjust the **Leader Line Direction** to the following 8 positions: **7, 8, 9, 6, 4, 1, 2, 3**
- ❑ Use the **trackball** (implied function) to adjust the Leader Line Direction to all 8 positions
- ❑ Use the **keypad** (implied function) to adjust the Leader Line Direction to the following 8 positions: **7, 8, 9, 6, 4, 1, 2, 3**
- ❑ Adjust the leader line direction to **your preferred setting**
- ❑ Use the **keyboard** (implied function) to adjust the Leader Line Direction for a **single target**
- ❑ Use the **keypad** (implied function) to adjust the Leader Line Direction for a **single target**

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8. Toggle Velocity Vector Lines on/off

- ❑ Use the **trackball** to toggle the current vector line **on**
- ❑ Use the **trackball** to activate the **Adjust Vector Length** function
  - Use the **keyboard** to set the vector lengths to **7**
- ❑ Use the **trackball** to activate the **Adjust Vector Length** function
  - Use the **keypad** to set the vector lengths to **your preferred setting**
  - Exit the **Adjust Vector Length** function

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9. Toggle the DCB menu on/off

- ❑ Use the **trackball** to toggle the DCB menu **off**
- ❑ Use the **trackball** to toggle the DCB menu **on**

Notes: _____

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11. Reposition Coast/Suspend List

- ❑ Use the **trackball** to activate the **Coast/Suspend List Reposition** function
  - Use the **trackball** to move the coast suspend list to the **lower right** of the display
  - Use the **trackball** to move the Coast/Suspend List to **your preferred location**
  - Exit the function

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12. Create and manipulate a New Window

- ❑ Use the **keyboard** to create a new window
  - Use the **trackball** to move the new window to the **lower right corner** of the display
  - Use the **trackball** to resize the new window to a square with sides of about **5 inches**
  - Use the **trackball** to reposition the map so that the holding area is in the **middle** of the display
  - Use the **trackball** to select the **Range** function
  - Use the **keyboard** to adjust the range in the new window to **7500 feet** (75 on the display)
  - Use the **trackball** to select the **Data Block Character Size Adjustment** function
  - Use the **keypad** to adjust the Data Blocks to **4**
  - Exit the **Character Size Adjustment** function
  - Use the **trackball** to delete the new window

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13. Local Aircraft /Vehicle Association

- ❑ Use the **trackball** to activate the **Local Aircraft /Vehicle Association** function
  - Use the **trackball** to select the local vehicle **101** data on the DCB
  - Use the **trackball** to associate the local vehicle information with a target
  - Use the **trackball** to exit the **Local Aircraft /Vehicle Association** function
- ❑ Use the **keyboard** to activate the **Initiate Control** function
  - Use the **keyboard** to enter **102** (to select the data for local vehicle 102)
  - Use the **trackball** to associate the local vehicle information with a target
- ❑ Use the **keypad** to activate the **Initiate Control** function
  - Use the **keypad** to enter **117** (to select the data for local vehicle 117)
  - Use the **trackball** to associate the local vehicle information with a target

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14. Suspend a Track

- ❑ Use the **trackball** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list
- ❑ Use the **keyboard** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list
- ❑ Use the **keypad** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list
- ❑ Suspend one additional track and verify

Notes: _____

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15. Initiate Control of a Suspended Track

- ❑ Use the **trackball** to activate the **Initiate Control** function
  - Use the **trackball** to reassociate a suspended data with a track by slewing to the track
  - Verify that the track is no longer suspended
- ❑ Use the **keyboard** to activate the **Initiate Control** function
  - Use the **keyboard** to enter a **suspended track id** and reassociate the suspended data with a track
  - Verify that the track is no longer suspended
- ❑ Use the **keypad** to activate the **Initiate Control** function
  - Use the **keypad** to enter a **suspended track id** and reassociate the suspended data with a track
  - Verify that the track is no longer suspended
- ❑ Use the **trackball** to move the cursor to the Coast/Suspend list and reassociate the suspended target with the remaining track
  - Verify that the track is no longer suspended

Notes: _____

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16. Define a Data Block Trait Area

- ❑ Use the **trackball** to activate the **DB Area** function
- ❑ Use the **trackball** to select the **Define Trait Area** function
  - Use the **trackball** to define a Data Block Trait Area polygon (make a rectangle around the aircraft in the holding area)
  - Use the **trackball** to select PARTIAL Data Blocks
  - Use the **trackball** to select the **Data Block Character Size** function
  - Use the **keyboard** to set a Data Block Character Size of **5**
  - Use the **trackball** to select the **Leader Line Direction** function
  - Use the **keypad** to set the Leader Line Direction to the **lower right position**
  - Use the **trackball** to select the **Leader Line Length** function
  - Use the **keypad** to set the Leader Line Length to **3**
  - Use the **trackball** to toggle the Velocity Vector **on**
  - Exit the **Define Trait Area** function

Notes: _____

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17. Save User Preference Set Function

- ❑ Use the **keyboard** to activate the **User Preference** function
  - Use the **trackball** to save the current display configuration
  - Use the **keyboard** to save the preference set as **LL04**
  - Use the **keyboard** to enter your password **LL**
  - Use the **keyboard** to enter the preference set title as **Script4**
  - Use the **trackball** to exit the User Preferences submenu

Notes: _____

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Participant Code _____

## ASDE-X Script 5: Keypack Script

### Instructions

1. Perform each function in the order it is presented.
2. Read each item carefully and check in the box provided as you complete the item.
3. If you do not understand an item, ask the usability coordinator for clarification.
4. If you have difficulty completing a function, you may refer to your training scripts.
5. Use the space provided to capture any notes so you can refer to them later.

**The research team will collect this form after the caucus so you will have your notes to reference.**

# ASDE-X EUIE Keypack Script

1. Select User Preference Set Function

❑ Use the **trackball** to activate the **User Preference** function

- Use the **keypack** to load the user preference sets for **009**
- Use the **trackball** to select the **Script4** User Preference Set
- Exit the **User Preference** function

Notes: _____

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2. Adjust Cursor Speed

❑ Use the **trackball** to activate the **Adjust Cursor Speed** function

- Use the **keypack** to set the cursor speed to **your preferred setting (1-10)**
- Exit the **Adjust Cursor Speed** function

Notes: _____

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3. Adjust Leader Line Direction

❑ Use the **keyboard** (implied function) to adjust the **leader line direction** to all 8 positions: **7, 8, 9, 6, 4, 1, 2, 3**

❑ Use the **keypack** (implied function) to adjust the **leader line direction** to all 8 positions: **7, 8, 9, 6, 4, 1, 2, 3**

❑ Use the **trackball** to adjust the leader line direction to **your preferred setting**

Notes: _____

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4. Suspend a Track

- ❑ Ensure the Coast/Suspend List is **on**
- ❑ Use the **trackball** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list
- ❑ Use the **keyboard** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list
- ❑ Use the **keypack** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list

Notes: _____

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5. Initiate Control of a Suspended Track

- ❑ Use the **keyboard** to activate the **Initiate Control** function
  - Use the **trackball** to reassociate a suspended data with a track by slewing to the track
  - Verify that the track is no longer suspended
- ❑ Use the **keypack** to activate the **Initiate Control** function
  - Use the **keypack** to enter a suspended track id and reassociate the suspended data with a track
  - Verify that the track is no longer suspended
- ❑ Use the **trackball** to move the cursor to the Coast/Suspend list and reassociate the suspended target with the remaining track
  - Verify that the track is no longer suspended

Notes: _____

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6. Terminate Control of a Track

- ❑ Use the **trackball** to activate the **Terminate Control** function
  - Use the **trackball** to terminate control of a track on the display
  - Verify that the data block disappears from the display and the target becomes unknown
- ❑ Use the **keyboard** to activate the **Terminate Control** function
  - Use the **trackball** to terminate control of a track on the display
  - Verify that the data block disappears from the display and the target becomes unknown
- ❑ Use the **keypack** to activate the **Terminate Control** function
  - Use the **trackball** to terminate control of a track on the display
  - Verify that the data block disappears from the display and the target becomes unknown

Notes: _____

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7. Toggle the Day/Night Color Palette

- ❑ Use the **trackball** to change to the **alternate palette**
  - Observe the alternate palette colors
  - Use the **trackball** to return to your **original palette**
- ❑ Use the **keyboard** to toggle to the alternate palette and back to your **original palette**
- ❑ Use the **keypack** to toggle to the alternate palette and back to your **original palette**

Notes: _____

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8. Range Function

- ❑ Use the **trackball** to activate the **Range** function
  - Use the **trackball** to adjust the range to **40,000 feet** (i.e., 400 on the range button)
  - Use the **keyboard** to adjust the range to **3,000 feet** (i.e., 30 on the range button)
  - Use the **keypack** to adjust the range to **20,000 feet** (i.e., 200 on the range button)

Notes: _____

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9. Local Aircraft /Vehicle Association

- ❑ Use the **keyboard** to activate the **Initiate Control** function
  - Use the **keyboard** to enter **104** (to select the data for local vehicle 104)
  - Use the **trackball** to associate the local vehicle information with a target
- ❑ Use the **keypack** to activate the **Initiate Control** function
  - Use the **keypack** to enter **102** (to select the data for local vehicle 102)
  - Use the **trackball** to associate the local vehicle information with a target

Notes: _____

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# ITEM 10—DAY VERSION

10. Adjust Brightness Settings

- ❑ Use the **trackball** to activate the **Brightness** function
  - Use the **keyboard** to set the TARGET ICONS brightness settings to **20**
  - Use the **keypack** to set the TARGET ICONS brightness settings to **100**
  - Use the **trackball** to set the DATA BLOCKS brightness settings to **45**
  - Use the **keypack** to set the DATA BLOCKS brightness settings to **80**
- ❑ Review the brightness settings and adjust any as necessary

Notes: _____

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# ITEM 10—NIGHT VERSION

10. Adjust Brightness Settings

- ❑ Use the **trackball** to activate the **Brightness** function
  - Use the **keyboard** to set the TARGET ICONS brightness settings to **20**
  - Use the **keypack** to set the TARGET ICONS brightness settings to **95**
  - Use the **trackball** to set the DATA BLOCKS brightness settings to **25**
  - Use the **keypack** to set the DATA BLOCKS brightness settings to **60**
- ❑ Review the brightness settings and adjust any as necessary

Notes: _____

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11.__Save User Preference Set Function

❑ Use the **trackball** to activate the **User Preference** function

- Use the **trackball** to activate the **save as** function
- Use the **keypack** to enter **### 05**
  *(### is the 3 digit number associated with your operating initials)*
- Use the **keyboard** to enter the preference set title as **Compare**
- Use the **keyboard** to enter your password **LL**
- Use the **trackball** to exit the User Preferences submenu

Notes: _____

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12.__Select User Preference Set Function

❑ Use the **trackball** to activate the **User Preference** function

- Use the **keypack** to load sets for **011**
- Use the **trackball** to select the **Keypack** User Preference Set
- Exit the **User Preference** function

Notes: _____

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13.__Delete Preference Set Function

❑ Use the **keyboard** to activate the **User Preference** function

- Use the **trackball** to select **Delete**
- Use the **keypack** to enter **### 05** (### is the three digit number associated with your operating initials)
- Use the **keyboard** to enter your password **LL**
- Use the **trackball** to exit the User Preferences submenu

Notes: _____

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Participant Code _____

## ASDE-X Script 5: Trackball Script

### Instructions

1. Perform each function in the order it is presented.
2. Read each item carefully and check in the box provided as you complete the item.
3. If you do not understand an item, ask the usability coordinator for clarification.
4. If you have difficulty completing a function, you may refer to your training scripts.
5. Use the space provided to capture any notes so you can refer to them later.

**The research team will collect this form after the caucus so you will have your notes to reference.**

# ASDE-X EUIE Trackball Script

1.__Select User Preference Set Function

- ❑ Use the **trackball** to activate the **User Preference** function
  - Use the **keyboard** to load the user preference sets for **009**
  - Use the **trackball** to select the **Script4** User Preference Set
  - Exit the **User Preference** function

Notes: _____

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2.__Adjust Cursor Speed

- ❑ Use the **trackball** to activate the **Adjust Cursor Speed** function
  - Use the **trackball** to set the cursor speed to **your preferred setting (1-10)**
  - Exit the **Adjust Cursor Speed** function

Notes: _____

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3.__Adjust Leader Line Direction

- ❑ Use the **keyboard** (implied function) to adjust the **leader line direction** to all 8 positions: **7, 8, 9, 6, 4, 1, 2, 3**
- ❑ Use the **trackball** to adjust the leader line direction to **your preferred setting**

Notes: _____

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4.__Suspend a Track

- ❑ Ensure the Coast/Suspend List is **on**
- ❑ Use the **trackball** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list
- ❑ Use the **keyboard** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list
- ❑ Use the **keyboard** to activate the **Suspend Track** function
  - Use the **trackball** to suspend a track on the display
  - Verify that the track icon changes to a two-digit number instead of an aircraft icon and that the number appears in the Coast/Suspend list

Notes: _____

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5.__Initiate Control of a Suspended Track

- ❑ Use the **trackball** to activate the **Initiate Control** function
  - Use the **trackball** to reassociate a suspended data with a track by slewing to the track
  - Verify that the track is no longer suspended
- ❑ Use the **keyboard** to activate the **Initiate Control** function
  - Use the **keyboard** to enter a suspended track id and reassociate the suspended data with a track
  - Verify that the track is no longer suspended
- ❑ Use the **trackball** to move the cursor to the Coast/Suspend list and reassociate the suspended target with the remaining track
  - Verify that the track is no longer suspended

Notes: _____

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6.__Terminate Control of a Track

- ❑ Use the **trackball** to activate the **Terminate Control** function
  - Use the **trackball** to terminate control of a track on the display
  - Verify that the data block disappears from the display and the target becomes unknown
- ❑ Use the **keyboard** to activate the **Terminate Control** function
  - Use the **trackball** to terminate control of a track on the display
  - Verify that the data block disappears from the display and the target becomes unknown

Notes: _____

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7.__Toggle the Day/Night Color Palette

- ❑ Use the **trackball** to change to the **alternate palette**
  - Observe the alternate palette colors
  - Use the **trackball** to return to your **original palette**
- ❑ Use the **keyboard** to toggle to the alternate palette and back to your **original palette**

Notes: _____

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8.__Range Function

- ❑ Use the **trackball** to activate the **Range** function
  - Use the **trackball** to adjust the range to **40,000 feet** (i.e., 400 on the range button)
  - Use the **keyboard** to adjust the range to **20,000 feet** (i.e., 200 on the range button)

Notes: _____

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9.__Local Aircraft /Vehicle Association

- ❑ Use the **keyboard** to activate the **Initiate Control** function
  - Use the **keyboard** to enter **104** (to select the data for local vehicle 104)
  - Use the **trackball** to associate the local vehicle information with a target
- ❑ Use the **trackball** to activate the **Local List** function
  - Use the **trackball** to select the data for local vehicle 102
  - Use the **trackball** to associate the local vehicle information with a target
  - Exit the function

Notes: _____

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# ITEM 10—DAY VERSION

10.__Adjust Brightness Settings

- ❑ Use the **trackball** to activate the **Brightness** function
  - Use the **trackball** to set the TARGET ICONS brightness settings to **40**
  - Use the **keyboard** to set the TARGET ICONS brightness settings to **100**
  - Use the **trackball** to set the DATA BLOCKS brightness settings to **45**
  - Use the **keyboard** to set the DATA BLOCKS brightness settings to **80**
  - Exit the function
- ❑ Review the brightness settings and adjust any as necessary

Notes: _____

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# ITEM 10—NIGHT VERSION

10. Adjust Brightness Settings

- ❑ Use the **trackball** to activate the **Brightness** function
  - Use the **trackball** to set the TARGET ICONS brightness settings to **40**
  - Use the **keyboard** to set the TARGET ICONS brightness settings to **100**
  - Use the **trackball** to set the DATA BLOCKS brightness settings to **45**
  - Use the **keyboard** to set the DATA BLOCKS brightness settings to **80**
  - Exit the function
- ❑ Review the brightness settings and adjust any as necessary

Notes: _____

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11.__Save User Preference Set Function

❑ Use the **trackball** to activate the **User Preference** function

- Use the **trackball** to activate the **save as** function
- Use the **keyboard** to enter **### 05**
  *(### is the 3 digit number associated with your operating initials)*
- Use the **keyboard** to enter the preference set title as **Compare**
- Use the **keyboard** to enter your password **LL**
- Use the **trackball** to exit the User Preferences submenu

Notes: _____

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12.__Select User Preference Set Function

❑ Use the **trackball** to activate the **User Preference** function

- Use the **keyboard** to load sets for **011**
- Use the **trackball** to select the **Keypack** User Preference Set
- Exit the **User Preference** function

Notes: _____

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13.__Delete Preference Set Function

❑ Use the **keyboard** to activate the **User Preference** function

- Use the **trackball** to select **Delete**
- Use the **keyboard** to enter **### 05** (### is the three digit number associated with your operating initials)
- Use the **keyboard** to enter your password **LL**
- Use the **trackball** to exit the User Preferences submenu

Notes: _____

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# APPENDIX C

## BACKGROUND QUESTIONNAIRE

The Background Questionnaire collected relevant information such as the participants' experience in ATC, tower equipment at their facility, typical distance from the D-BRITE, and computer experience. The EUIE participants completed this questionnaire during the orientation session.

# ASDE-X EUIE Background Questionnaire

## Instructions

The purpose of this questionnaire is to obtain information about your experience and background as an air traffic control tower specialist. So that your input can remain anonymous, please do not write your name anywhere on this or other data collection forms. Instead, enter your assigned participant code. If you have any questions, or are unclear about an item, please contact a member of the research team.

**Participant Code**: _____

1. What is your current job title? _____
2. To which facility are you currently assigned? _____
3. How much experience do you have as an Air Traffic Controller? Years: _____ Months: _____
4. How many years of experience do you have in the following air traffic control domains:
   a. Terminal: ____ yrs b. En Route: ____ yrs c. Oceanic: ____ yrs d. Military: ____ yrs
5. How many of the past 12 months have you worked in the tower? Months: _____
6. What tower displays do you have available at your facility? (Circle all those that apply)
   a. D-BRITE b. ASDE-3* c. Other (please specify): _____
   *If you use ASDE-3, what is your **typical** working distance from this display? _____ (feet)
7. What version of ARTS do you use at your facility? _____
8. When controlling traffic, what is your:
   a. **typical** distance from the D-BRITE? _____ (feet)
   b. **maximum** distance from the D-BRITE? _____ (feet)
9. Are you right or left handed? (Circle one) Right Left
10. What is your general computer experience level? (Circle one)

    1 ——— 2 ——— 3 ——— 4 ——— 5
    Beginner Expert

11. Is there anything else you would like to add regarding your participation in this assessment? _____

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# APPENDIX D

## POST SCRIPT QUESTIONNAIRES

Usability Scripts 1-4 had accompanying PSQs that the EUIE participants completed at the conclusion of each usability session. The PSQs contain some identical items, such as the intuitiveness of the functions performed, but most focus on script-specific aspects of the interface. Each item contains a rating scale and a comment area. The items are in the form of a positive statement (e.g., the methods for rotating the map are acceptable). The rating scale is identical for all PSQs and includes a true and false option. If false is selected, the individual is required to provide a rating of the impact of that item on their performance (i.e., high, moderate, or low). The comment area provides space to explain false ratings and to provide additional comments. PSQ1 contains 31 items, PSQ2 and PSQ3 contain 27 items, and PSQ 4 contains 20 items.

Participant Code _____

# ASDE-X POST SCRIPT QUESTIONNAIRE 1

## Purpose

The following questions are designed to collect data about specific functions you just exercised.

## Instructions

1. Read each item carefully.
2. The questions ask you to rate the acceptability of the function in terms of the following areas.
   a. How you select and perform the function (methods).
   b. The available range and steps between increments.
   c. Function setting indicators.
   d. Your overall assessment of how well the function works. When providing this rating, consider the ease of locating and invoking function, the number of steps required, the result of your action, etc.).
   e. Intuitiveness of the functions you performed during this script (i.e., how easy it would be to remember how to find a function button and perform it).
3. **Check** the box that most accurately reflects your experience using the prototype. Each item provides a statement followed by 2 choices – **True** or **False**.
   - If the feature was acceptable, check **True**. You may add comments if you wish.
   - If you found that a feature was problematic, check **False** as your response, rate its **Impact**, and describe the specific problem(s) in the **Comments** area.
4. If you have any questions or do not understand an item, please ask the usability coordinator or a EUIE team member.

*The information you provide will be anonymous and kept strictly confidential*.

**Thank you for your participation.**

| Item | Rating | Comments |
|---|---|---|
| 1. The range of cursor speeds is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 2. The methods (keyboard, trackball) for adjusting the cursor speed are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 3. Overall, *the adjust cursor function is acceptable*. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 4. The range of range values (300 ft to 60,000 ft) and the steps between range increments (100 ft) are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 5. Displaying the range in hundreds of feet is acceptable (e.g., 50 = 5,000 ft). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 6. The methods (trackball, keyboard) for changing the range setting are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 7. *Overall, the Range function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 8. When rotating the map, the display response to your input is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 9. The methods (trackball, keyboard) for rotating the map are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 10. *Overall, the Rotate function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 11. The range of movement available for repositioning the map is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 12. The methods (DCB, Hotkey) for repositioning the map are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 13. *Overall, the Map Reposition function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 14. The number of brightness controls is acceptable (i.e., necessary brightness controls are provided and there are no more controls than needed). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 15. The range of brightness settings and the steps between brightness increments are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 16. The brightness readout (i.e., the displayed value) is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 17. *Overall, the Brightness function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 18. The text font is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 19. The number of character size controls is acceptable (i.e., character size adjustments are available for all necessary text components). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 20. The range of character sizes and the steps between character sizes are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 21. *Overall, the Character Size function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 22. The method for adjusting the leader line direction is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 23. The number of leader line directions (8) is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 24. *Overall, the Leader Line Direction function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 25. The range of leader line lengths is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 26. The methods (DCB, /-#-ENTER) for adjusting the leader line length are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 27. *Overall, the Leader Line Length function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 28. The methods (DCB, Hotkey) for selecting the color palette are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 29. *Overall, the Day/Night Palette Select function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 30. The method for saving user preferences is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 31. The functions I used in this script are intuitive (it would be easy to remember where to find them, how to use them, etc.) | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

Comments: _____

Participant Code _____

# ASDE-X POST SCRIPT QUESTIONNAIRE 2

## Purpose

The following questions are designed to collect data about specific functions you just exercised.

## Instructions

1. Read each item carefully.
2. The questions ask you to rate the acceptability of the function in terms of the following areas.
3. How you select and perform the function (methods).
    a. The available range and steps between increments.
    b. Function setting indicators.
    c. Your overall assessment of how well the function works. When providing this rating, consider the ease of locating and invoking function, the number of steps required, the result of your action, etc.).
    d. Intuitiveness of the functions you performed during this script (i.e., how easy it would be to remember how to find a function button and perform it).
4. **Check** the box that most accurately reflects your experience using the prototype. Each item provides a statement followed by 2 choices – **True** or **False**.
    - If the feature was acceptable, check **True**. You may add comments if you wish.
    - If you found that a feature was problematic, check **False** as your response, rate its **Impact**, and describe the specific problem(s) in the **Comments** area.
5. If you have any questions or do not understand an item, please ask the usability coordinator or a EUIE team member.

*The information you provide will be anonymous and kept strictly confidential*.

**Thank you for your participation.**

| Item | Rating | Comments |
|---|---|---|
| 1. *Overall, the Velocity Vector On/Off function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 2. *Overall, the Display Control Bar [DCB] On/Off function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 3. The methods (DCB, Hotkey-ENTER, Hotkey-operator initials-ENTER, Hotkey-operator initials-#-ENTER) for selecting and loading user preferences are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 4. The method for saving user preferences is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 5. *Overall, the User Preference function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 6. The method for toggling the history trails on and off are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 7. The methods (keyboard, trackball) for adjusting the history trail length are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 8. The range of History Trail lengths is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 9. *Overall, the history trail function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 10. The methods (DCB, Hotkey-L-ENTER) for toggling the Coast / Suspend List on and off are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 11. *Overall, the Coast / Suspend List On/Off function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 12. *Overall, the Preview Reposition function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 13. *Overall, the Coast / Suspend List Reposition function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 14. The methods (keyboard, trackball) for adjusting the velocity vector length are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 15. The range and steps between increments of velocity vector lengths is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 16. *Overall, the Velocity Vector Length Select function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 17. *Overall, the DCB Reposition function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 18. The methods (DCB, Hotkey) for creating a new window are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 19. *Overall, the Create Window function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 20. *Overall, the Reposition Window function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 21. *Overall, the Resize Window function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 22. *Overall, the Delete Window function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 23. The methods (trackball, keyboard) for changing the range within a secondary window are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 24. The methods (trackball, keyboard) for selecting and repositioning the map within a secondary window are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 25. The methods (trackball, hotkey) for toggling data blocks on and off within a secondary window is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 26. The methods (implied, trackball) for adjusting the leader line direction within a secondary window are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 27. The functions I used in this script are intuitive (it would be easy to remember where to find them, how to use them, etc.) | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

Comments: _____

Participant Code _____

# ASDE-X POST SCRIPT QUESTIONNAIRE 3

## Purpose

The following questions are designed to collect data about specific functions you just exercised.

## Instructions

1. Read each item carefully.
2. The questions ask you to rate the acceptability of the function in terms of the following areas.
    a. How you select and perform the function (methods).
    b. The available range and steps between increments.
    c. Function setting indicators.
    d. Your overall assessment of how well the function works. When providing this rating, consider the ease of locating and invoking function, the number of steps required, the result of your action, etc.).
    e. Intuitiveness of the functions you performed during this script (i.e., how easy it would be to remember how to find a function button and perform it).
3. **Check** the box that most accurately reflects your experience using the prototype. Each item provides a statement followed by 2 choices – **True** or **False**.
    - If the feature was acceptable, check **True**. You may add comments if you wish.
    - If you found that a feature was problematic, check **False** as your response, rate its **Impact**, and describe the specific problem(s) in the **Comments** area.
4. If you have any questions or do not understand an item, please ask the usability coordinator or a EUIE team member.

*The information you provide will be anonymous and kept strictly confidential*.

**Thank you for your participation.**

| Item | Rating | Comments |
|---|---|---|
| 1. The methods (Display Control Bar [DCB] list-slew-ENTER, Hotkey-###-slew-ENTER) for associating a local aircraft / vehicle tag to a target are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 2. The number of tags available in the local database of aircraft / vehicles is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 3. *Overall, the Local Aircraft / Vehicle List function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 4. The methods (DCB, Hotkey) for suspending a track are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 5. *Overall, the Track Suspend function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 6. The methods (hotkey-slew-enter, trackball dwell emphasis over the Suspend List entry, hotkey-##--enter) for re-initiating control of a suspended track are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 7. *Overall, the Initiate Control function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 8. The methods (DCB, Hotkey) for terminating control for a target are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 9. *Overall, the Terminate Control function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 10. The method for toggling an individual data block on and off is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 11. The method for toggling all data blocks in a window on and off is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 12. *Overall, the Data Block On/Off function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 13. The components available for a full data block (callsign, beacon code, heavy designator, aircraft/ vehicle type, and fix on and off) are acceptable (i.e., includes all necessary information). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 14. *Overall, the Data Block Field function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 15. The functions in the Define Trait Area are acceptable (e.g., all needed functions are included in the submenu, no unnecessary functions are included). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 16. The method for drawing a data block trait area or data block off area is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 17. *Overall, the Define Trait Area function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 18. *Overall, the Define Off Area function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 19. *Overall, the Delete Data Block Area function is acceptable.* | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 20. The methods (multifunction, trackball) for entering data into scratchpad areas is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 21. The amount of space available for entering data into the scratchpads is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 22. The method for adjusting the leader line direction within a secondary window is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 23. The method for adjusting the leader line length within a secondary window is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 24. The method for adjusting the character size within a secondary window is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 25. The method for toggling the velocity vector on and off within a secondary window is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 26. The method for saving user preferences is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 27. The functions I used in this script are intuitive (it would be easy to remember where to find them, how to use them, etc.) | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

Comments: _____

Participant Code _____

# ASDE-X POST SCRIPT QUESTIONNAIRE 4

## Purpose

The following questions are designed to collect data about specific functions you just exercised.

## Instructions

1. Read each item carefully.
2. The questions ask you to rate the acceptability of the function in terms of the following areas.
    a. How you select and perform the function (methods).
    b. The available range and steps between increments.
    c. Function setting indicators.
    d. Your overall assessment of how well the function works. When providing this rating, consider the ease of locating and invoking function, the number of steps required, the result of your action, etc.).
    e. Intuitiveness of the functions you performed during this script (i.e., how easy it would be to remember how to find a function button and perform it).
3. **Check** the box that most accurately reflects your experience using the prototype. Each item provides a statement followed by 2 choices – **True** or **False**.
    - If the feature was acceptable, check **True**. You may add comments if you wish.
    - If you found that a feature was problematic, check **False** as your response, rate its **Impact**, and describe the specific problem(s) in the **Comments** area.
4. If you have any questions or do not understand an item, please ask the usability coordinator or a EUIE team member.

*The information you provide will be anonymous and kept strictly confidential*.

**Thank you for your participation.**

| Item | Rating | Comments |
|---|---|---|
| 1. Overall, the adjust cursor speed function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 2. Overall, the Range function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 3. Overall, the map reposition function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 4. Overall, the Brightness function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 5. Overall, the Character Size function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 6. Overall, the Leader Line Direction function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 7. Overall, the toggle Velocity Vector on/off function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 8. Overall, the Display Control Bar [DCB] On/Off function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 9. Overall, the User Preference function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 10. Overall, the Coast / Suspend List Reposition function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 11. Overall, the Create Window function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 12. Overall, the Window Reposition function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 13. Overall, the Resize Window function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 14. Overall, the Local Aircraft / Vehicle List function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 15. Overall, the Track Suspend function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 16. Overall, the Initiate Control function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 17. Overall, the Define Trait Area function is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 18. The functions I used in this script are intuitive (it would be easy to remember where to find them, how to use them, etc.) | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 19. The monitor-to-keyboard configuration I used during this script is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 20. Overall, the alternate monitor location did not interfere with my ability to perform the functions in this script. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

Comments: _____

# APPENDIX E

## READABILITY DATA COLLECTION FORM

During the EUIE readability sessions at the Research Tower Cab, the researcher completed the Readability Data Collection Form. It captured background information, user preference settings, and identification accuracy during each of four lighting-palette conditions (i.e., day-day palette, dusk-day palette, dusk-night palette, and night-night palette). The background information includes the date, time, starting illumination level, and ending illumination level. The user preference settings include the monitor settings (i.e., height and tilt), font settings, and brightness settings. The form provides space for the test coordinator to indicate whether participants accurately identified four data blocks (one data block in each of three display windows and one from the C/S list) and six icons (one from each display window) from six locations.

Participant Code _____

# ASDE-X READABILITY DATA COLLECTION FORM

This form is to be completed by the readability test coordinator

Complete the form for each of the 4 conditions:

- Day - day palette,
- Dusk - day palette,
- Dusk - night palette, and
- Night - night palette.

## Test Coordinator Instructions

1. Complete background information for the current condition (Start, Monitor Settings, Font settings, and Brightness settings)
2. Allow the participant to adjust the monitor height and tilt (they cannot adjust the lateral position of the display)
3. Have the participant set the font size and brightness settings
4. Record the incident illumination at the surface of the monitor (**Day Condition**: supplement to min 3,000 fc with pallite lamp if necessary)
5. Instruct participant to stand at location 1
6. Ask participant to identify **1 data block** from each window and the coast list (enter callsign in space provided) and check if response is correct
7. Ask participant to identify **2 symbols** from each window and check if response is correct
8. **All responses correct** (data block and symbols)—**proceed to the next condition**

   **Any incorrect responses**—have participant **move to the next location**
9. Repeat steps 6 thru 8 until 100% accuracy is achieved
10. Record the ending incident illumination level

## Bright – Day Palette

| Start | Monitor Settings | Font settings | Brightness settings | |
|---|---|---|---|---|
| Date: _____ | Display ht: _____ in | Data block: _____ | Runway: _____ | Lists: _____ |
| Time: _____ | Display Tilt: _____ deg | CS List: _____ | Taxiway: _____ | Target icons: _____ |
| Illumination: ____ fc | | DCB:_____ | Apron: _____ | Data blocks: _____ |
| | | | Bkgd1/Vbk: ____ | History trails: ____ |

| **Location 1**<br>*8 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 2**<br>*8 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

| **Location 3**<br>*5 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

| **Location 4**<br>*5 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

| **Location 5**<br>*2.5 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

| **Location 6**<br>*2.5 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

Comments: _____

## Dusk – Day Palette

| Start | Monitor Settings | Font settings | Brightness settings | |
|---|---|---|---|---|
| Date: _____ | Display ht: _____ in | Data block: _____ | Runway: _____ | Lists: _____ |
| Time: _____ | | CS List: _____ | Taxiway: _____ | Target icons: _____ |
| Illumination: ____ fc | Display Tilt: _____ deg | DCB:_____ | Apron: _____ | Data blocks: _____ |
| | | | Bkgd1/Vbk: ____ | History trails: ____ |

| **Location 1**<br>*8 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

| **Location 2**<br>*8 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

| **Location 3**<br>*5 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

| **Location 4**<br>*5 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

| **Location 5**<br>*2.5 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

| **Location 6**<br>*2.5 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level:** _____ fc | |

Comments: _____

## Dusk – Night Palette

| Start | Monitor Settings | Font settings | Brightness settings | |
|---|---|---|---|---|
| Date: _____ | Display ht: _____ in | Data block: _____ | Runway: _____ | Lists: _____ |
| Time: _____ | | CS List: _____ | Taxiway: _____ | Target icons: _____ |
| Illumination: ____ fc | Display Tilt: _____ deg | DCB:_____ | Apron: _____ | Data blocks: _____ |
| | | | Bkgd1/Vbk: ____ | History trails: ____ |

| **Location 1**<br>*8 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 2**<br>*8 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 3**<br>*5 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 4**<br>*5 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 5**<br>*2.5 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 6**<br>*2.5 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

Comments: _____

## Night – Night Palette

| Start | Monitor Settings | Font settings | Brightness settings | |
|---|---|---|---|---|
| Date: _____ | Display ht: _____ in | Data block: _____ | Runway: _____ | Lists: _____ |
| Time: _____ | | CS List: _____ | Taxiway: _____ | Target icons: _____ |
| Illumination: ____ fc | Display Tilt: _____ deg | DCB:_____ | Apron: _____ | Data blocks: _____ |
| | | | Bkgd1/Vbk: ____ | History trails: ____ |

| **Location 1**<br>*8 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 2**<br>*8 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 3**<br>*5 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 4**<br>*5 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 5**<br>*2.5 feet 40 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

| **Location 6**<br>*2.5 feet 0 degrees* | | **Data block** | **Symbol**<br>a) Aircraft b) Heavy Aircraft c) Vehicle<br>d) Unknown e) Suspend Target f) Coast Target | |
|---|---|---|---|---|
| **Window:** | **1** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| 1 2 3 | **2** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **3** | _____ ❒ Correct | _____ ❒ Correct | _____ ❒ Correct |
| | **Coast List** | _____ ❒ Correct | **Ending Illumination Level**: _____ fc | |

Comments: _____

# APPENDIX F

## READABILITY QUESTIONNAIRE

The Readability Questionnaire contains five identical items for each of the four illuminance-palette conditions. The EUIE participants completed the five items immediately following each condition. The items address the readability of the display when close to the monitor and at extended angles and distances, the readability of the data blocks and target icons, and the discriminability of runways and taxiways. This questionnaire uses the same scale as the PSQs.

Participant Code _____

## ASDE-X READABILITY EVALUATION

# Instructions

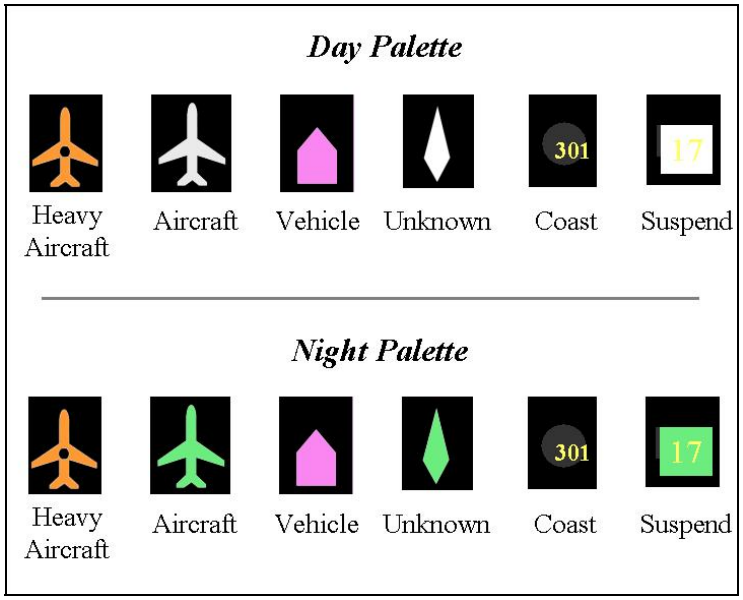
1. During this assessment, you will identify text and icons on the ASDE-X display from four locations.

2. You will complete the process four times.

3. First, adjust the following so that the display would be usable from your typical working distance:
   - Monitor height
   - Monitor tilt
   - Display brightness
   - Display font size

4. Next, move to Location 1 and identify the data blocks selected by the test coordinator.

5. Next, identify the icons selected by the test coordinator. They will be one of the following.




6. Once instructed, complete the five readability questions for the current test condition.

# ASDE-X READABILITY QUESTIONNAIRE

## Purpose

The following questions collect data on the readability of the ASDE-X prototype interface under varying conditions. These conditions are:

1. Day conditions using the day palette,
2. Dusk conditions using the day palette,
3. Dusk conditions using the night palette, and
4. Night conditions using the night palette.

## Instructions

5. You will be notified when to complete this form. This will occur after you can accurately identify ten display items at a fixed distance from the display.
6. Complete only those 5 questions related to the current evaluation condition.
7. **Check** the box that most accurately reflects your experience using the prototype. Each item provides a statement followed by 2 choices – **True** or **False**.
   - If the feature was acceptable, please check **True**. You may add comments if you wish.
   - If you found that a feature was problematic, please choose **False** as your response, rate its **impact**, and explain the specific problem in the **Comments** area.
8. If you have any questions, or do not understand an item, please ask the test coordinator or a EUIE team member.

*The information you provide will be anonymous and kept strictly confidential*.

**Thank you for your participation.**

Answer the following for the current test condition only. *If the statement is false, please rate its impact and describe why.*

| Bright – Day Palette | | |
|---|---|---|
| **Item** | **Rating** | **Comments** |
| 1. Readability of the ASDE-X display is acceptable when you are close to the monitor (e.g., when adjusting the display settings). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 2. Readability of the ASDE-X display is acceptable to support your task at extended angles and distances. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 3. Readability of the **data blocks** is acceptable from your typical working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 4. Differentiation of the **target symbols** is acceptable from your typical working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 5. Discriminability between **runways and taxiways** is acceptable from your typical working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

Comments: _____

| Dusk – Day Palette | | |
|---|---|---|
| **Item** | **Rating** | **Comments** |
| 6. Readability of the ASDE-X display is acceptable <u>when you are close</u> to the monitor (e.g., when adjusting the display settings). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 7. Readability of the ASDE-X display is acceptable to support your task <u>at extended angles and distances</u>. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 8. Readability of the **data blocks** is acceptable from your <u>typical</u> working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 9. Differentiation of the **target symbols** is acceptable from your <u>typical</u> working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 10. Discriminability between **runways and taxiways** is acceptable from your <u>typical</u> working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

Comments: _____

| Dusk – Night Palette | | |
|---|---|---|
| **Item** | **Rating** | **Comments** |
| 11. Readability of the ASDE-X display is acceptable <u>when you are close</u> to the monitor (e.g., when adjusting the display settings). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 12. Readability of the ASDE-X display is acceptable to support your task <u>at extended angles and distances</u>. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 13. Readability of the **data blocks** is acceptable from your <u>typical</u> working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 14. Differentiation of the **target symbols** is acceptable from your <u>typical</u> working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 15. Discriminability between **runways and taxiways** is acceptable from your <u>typical</u> working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

Comments: _____

| Dark – Night Palette | | |
|---|---|---|
| **Item** | **Rating** | **Comments** |
| 16. Readability of the ASDE-X display is acceptable <u>when you are close</u> to the monitor (e.g., when adjusting the display settings). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 17. Readability of the ASDE-X display is acceptable to support your task <u>at extended angles and distances</u>. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 18. Readability of the **data blocks** is acceptable from your <u>typical</u> working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 19. Differentiation of the **target symbols** is acceptable from your <u>typical</u> working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 20. Discriminability between **runways and taxiways** is acceptable from your <u>typical</u> working distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

Comments: _____

# APPENDIX G

## EXIT QUESTIONNAIRE

The Exit Questionnaire contains three sections. The first section investigates how often a controller expects to use each of the available methods for selecting and completing a function. Section 2 includes 27 items focused on the overall acceptability of each function. The 29 items in Section 3 collect data about human factors components such as labels, fonts, and menu arrangement. The participants completed this questionnaire immediately after completing Script 5.

Participant Code _____

# ASDE-X EXIT QUESTIONNAIRE

## Purpose

The following questions are designed to collect data about specific aspects of the computer-human interface (CHI) of the ASDE-X prototype. There are three sections.

**Section I: Data Input Usage Rating**.
The checklist asks you to rate how often you would expect to use each available method for invoking or adjusting the function. The scale has 5 points and ranges from never to always.

**Section II: Component acceptability.**
Each item provides a statement about the acceptability of a component of the CHI. It also includes functions that were only demonstrated. You may respond with **True** or **False**. If you indicate that the statement is false, please indicate the impact of the item (high, moderate, or low) and indicate why it is a concern.

**Section III: Overall Human Factors.**
This section addresses general human factors areas. These areas include visual displays, alarms and alerts, input devices and data entry, feedback and user guidance, and general items. This section uses the same scale provided in Section 2.

## Instructions

1. Read each item carefully.
2. For Section 1, rate how often you would expect to use each method to invoke or adjust the function listed. Please circle your response (1, 2, 3, 4, or 5). The methods for selecting and adjusting the functions are listed below. Keypack refers to the keypad plus trackball unit, but the actions refer to use of the keypad only.
   - **Select, toggle, suspend, or initiate**
     - Keyboard = keyboard hotkey
     - Trackball = slew and click on the Display Control Bar (DCB) button
     - Keypack = keypack hotkey
   - **Adjust, rotate**
     - Keyboard = keyboard number keys to enter a value
     - Trackball = rolling the trackball up or down
     - Keypack = keypack number keys to enter a value or implied function for leader direction
3. For Sections 2 and 3, **check** the box that most accurately reflects your experience using the prototype. Each item provides a statement followed by 2 choices – **True** or **False**.
   - If the feature was acceptable, please check **True**. You may add comments if you wish.
   - If you found that a feature was problematic during the EUIE, please choose **False** as your response, rate its **Impact**, and explain the specific problem in the **Comments** area.
4. If you have any questions or do not understand an item, please ask the test coordinator or a EUIE team member.

*The information you provide will be anonymous and kept strictly confidential*.

**Thank you for your participation.**

## Section I. Data Input Usage Rating

I. Rate how often you would expect to use each of the data input devices for the following functions*.

| | | Never | Seldom | Sometimes | Usually | Always |
|---|---|---|---|---|---|---|
| 1a. **Select** the preference set function | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| 1b. **Choose** a preference set | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack | 1 | 2 | 3 | 4 | 5 |
| 2. **Select** initiate control of a suspended track | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack | 1 | 2 | 3 | 4 | 5 |
| 3. **Select** suspend track | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack | 1 | 2 | 3 | 4 | 5 |
| 4. **Select** terminate control of a track | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack | 1 | 2 | 3 | 4 | 5 |
| 5. **Toggle** the Data Blocks on and off for a window | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| 6. **Select** the map reposition function | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| 7. **Toggle** the Day/Nite palette | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack | 1 | 2 | 3 | 4 | 5 |
| 8. **Select** create a new window | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| 9. **Select** the home function | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| 10. **Adjust** (rotate) the map orientation | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack | 1 | 2 | 3 | 4 | 5 |

*Some item numbers include letters (e.g., 1a). For these, the first item refers to selecting the function and the second to adjusting it.

Question I (continued)

Rate how often you would expect to use each of the data entry methods for the following functions.

| | | Never | Seldom | Sometimes | Usually | Always |
|---|---|---|---|---|---|---|
| 11. **Adjust** the brightness | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack | 1 | 2 | 3 | 4 | 5 |
| 12. **Adjust** the character size | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack | 1 | 2 | 3 | 4 | 5 |
| 13. **Adjust** the leader line direction | Keyboard (implied) | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack (implied) | 1 | 2 | 3 | 4 | 5 |
| 14a. **Select** adjust History trail length | Keyboard (multifunction) | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| 14b. **Adjust** the number of History trails | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack | 1 | 2 | 3 | 4 | 5 |
| 15. **Toggle** the Coast/Suspend List on and off | Keyboard (multifunction) | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| 16a. **Select** adjust Leader Line Length | Keyboard (implied) | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| 16b. **Adjust** the Leader Line Length | Keyboard | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |
| | Keypack | 1 | 2 | 3 | 4 | 5 |
| 17. **Select** Reposition Preview Area | Keyboard (multifunction) | 1 | 2 | 3 | 4 | 5 |
| | Trackball | 1 | 2 | 3 | 4 | 5 |

Comments: _____

_____

_____

_____

_____

## Section II. Overall Component Acceptability

II. Rate the following statements. *If the statement is false, please rate its impact and describe why*:

| Item | Rating | Comments |
|---|---|---|
| 1. The time to set up this system using preference sets at the start of a shift is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 2. The Display Control Bar [DCB] is acceptable (size, layout, organization, usability, available options, etc.) | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 3. The map elements (distinguishability of taxiways, runways, and apron areas, etc.) are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 4. The aircraft, heavy aircraft, and vehicle icons are acceptable (distinguishability between icons, size of icons, etc.). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 5. The unknown, coast, and suspend track icons are acceptable (distinguishability between icons, size of icons, etc.). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 6. The number of icons is acceptable (all important target types are represented, unnecessary target types are not presented) | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 7. The leader lines for identifying which data block belongs to which target are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 8. Information about target movement (e.g., history trails, vector lines) is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 9. Data blocks are acceptable (content, readability, etc.). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 10. The data block trait areas are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 11. The data block off areas are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 12. The palette I used during the usability sessions is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 13. The method for navigating through the Coast / Suspend List (demonstrated during training) is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 14. The Coast / Suspend List is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 15. The preview area for monitoring data entries is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 16. Overall readability of the display is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 17. System mode and health indicators are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 18. The indication of a lost target (coast situation A that was demonstrated during training) is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 19. The indication that a target has entered the apron area (coast situation B that was demonstrated during training) is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 20. The monitor (hardware) is acceptable from your typical viewing distance. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 21. The keyboard (hardware) is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 22. The trackball (hardware) is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 23. The keypack [keypad plus trackball] (hardware) is acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 24. The keypack (keypad plus trackball) is acceptable for adjusting leader line direction. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 25. The trackball is acceptable for adjusting leader line direction. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 26. The functions selected for Hotkeys on the keyboard are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 27. The functions selected for Hotkeys on the keypad are acceptable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

## Section III. Overall Human Factors

III. Rate the following statements. *If the statement is false, please rate its impact and describe why*:

| Item | Rating | Comments |
|---|---|---|
| 1. The display provides all necessary information (i.e., important information is not missing). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 2. This system gives you the ability to declutter the display (data block on/off, defining data block trait areas, defining data block off areas, data block editing, history on/off, vector on/off, etc.). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 3. Information that you need does not disappear from the screen unless you delete or suppress it. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 4. This display presents all information in usable form (e.g., velocity in knots, range in hundreds of feet). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 5. Icons are easy to interpret. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 6. The meaning of each DCB label is apparent. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 7. DCB labels, keyboard labels, and acronyms are used consistently throughout this system. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 8. The fonts used are clear and easy to read. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 9. Colors within each palette have consistent meanings (i.e., a particular color always means the same thing). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 10. Windows are easy to locate, size, and reposition. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 11. The input devices are appropriate for performing the necessary functions (e.g., alphanumeric data entry, use of windows, cursor positioning). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 12. The keyboard is easy to use. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 13. The trackball is easy to use. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 14. The trackball allows the user to precisely position the cursor within a small area. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 15. Hotkeys are provided for the commands I would use most frequently. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 16. Keystrokes or other data entry actions appear immediately on the screen (i.e., there is no delay in showing what has been entered). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 17. The method for selecting options and manipulating objects is consistent throughout this system (e.g. repositioning display elements, modifying display characteristics such as font size and brightness). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 18. The number of control actions (e.g., key strokes) necessary to input data or perform a function are reasonable. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 19. The DCB is arranged in a logical order. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 20. The DCB is easy to use and does not provide too many options or levels. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 21. This system provides feedback on the status of an initiated action (i.e., you always know what this system is doing). | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 22. This system is easy to learn. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 23. The classroom and hands-on training for the ASDE-X EUIE was adequate. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 24. This system is easy to use. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 25. This system requires minimal interaction once configured. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 26. This system would enhance my situation awareness of traffic in my coverage area. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

| Item | Rating | Comments |
|---|---|---|
| 27. This system would help me recognize situations that require control action. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 28. The ASDE-X system would improve my efficiency. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |
| 29. Overall, I am satisfied with the ASDE-X interface. | ❑ True<br>❑ False → *Impact*<br>❑ High<br>❑ Moderate<br>❑ Low | |

## V. General Comments

Please provide any additional comments pertaining to the ASDE-X computer model or EUIE:

# APPENDIX H

## STATEMENT OF CONFIDENTIALITY AND INFORMED CONSENT

The Statement of Confidentiality and Informed Consent informs participants of the ethical principles employed by the research team in accordance with the American Psychological Association guidelines. It explains that their participation is voluntary, they may withdraw without consequence, their responsibilities will be clearly defined, and their data will remain anonymous and confidential. The form includes several ASDE-X EUIE points of contact to get additional information or to address concerns. The bottom of the form provides a signature block for the participant and test coordinator.

# Federal Aviation Administration

***William J. Hughes Technical Center***

Research & Development Human Factors Laboratory

## STATEMENT OF CONFIDENTIALITY AND INFORMED CONSENT

Researchers from the William J. Hughes Technical Center NAS System Engineering and Analysis Division (ACT-500) and its contractors maintain strict standards regarding participant confidentiality and informed consent. Our standards are based on the *Ethical Principles in the Conduct of Research with Human Participants* by the American Psychological Association. Our standards are structured around four main principles:

- **Your participation is voluntary**. You may withdraw from this Early User Involvement Event (EUIE) at any time and for any reason without consequence. If you feel you must withdraw, please inform the researchers immediately.

- **Your responsibilities will be clear**. The researchers will clearly explain what is expected of you during the EUIE. They will answer any questions about the objectives of the research, the research design, and the data collection techniques.

- **Your data will remain anonymous**. Your responses will be identified by a code known only to you and the researchers. Your identity will be kept separate from all data you provide. Your identity will not be associated with any comment, response, or other data reported in any document generated by the EUIE. To help achieve this, please do not write your name or any other identifying marks on the questionnaires.

- **Your data will be confidential**. The raw data collected in this study will become the property of the ASDE-X Visual Specifications Working Group. They will not make your raw data available to any other organization without your permission. Engineering research psychologists will analyze the raw data using standard data reduction and analysis techniques. They will only report *aggregate* data to the Office of Communications, Navigation, and Surveillance Systems (AND) and other FAA organizations. *Aggregate* data includes averages, standard deviations, and other similar statistics.

Good research requires good data. We hope that by protecting your rights, we are encouraging you to be as accurate and honest as possible in your responses. If you have questions at any time regarding the EUIE, the researchers will be glad to answer them. For additional questions, you may contact members of the research team or their managers: ACT-530 [Dr. Michael McAnulty at (609) 485-5380 or Dr. Earl Stein at (609) 485-6389]; ACT-310 [Joe Longo at (609) 485-4759 or Jeffrey Livings at (609) 485-5342]; or AND-202 [Alan Poston at (202) 493-4519].

Research Participant: _____

Investigator: _____

***Thank you for participating in the ASDE-X EUIE!***