



EMB145 - EMB135

AIRCRAFT
MAINTENANCE MANUAL

WEATHER RADAR - ADJUSTMENT/TEST

EFFECTIVITY: ALL

1. General

- A. This section gives the procedures to do the test of the weather radar system.
- B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	DESCRIPTION	EFFECTIVITY
34-42-00-700-801-A	WEATHER RADAR SYSTEM OPERATION- ALL AL TEST	



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TASK 34-42-00-700-801-A

EFFECTIVITY: ALL

2. WEATHER RADAR SYSTEM OPERATIONAL TEST

A. General

- (1) This task gives the procedures to do the operational test of the weather radar system.
- (2) To do this task, it is necessary to put the aircraft in an area free of large metallic objects such as hangar or other aircraft.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-30-00/100	-
AMM SDS 31-42-00/1	
AMM SDS 34-21-00/1	
AMM SDS 34-22-00/1	
AMM SDS 34-27-00/1	
AMM SDS 34-42-00/1	
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 49-10-00-910-802-A/200	APU - START
AMM TASK 49-10-00-910-803-A/200	APU - SHUTDOWN
AMM TASK 49-13-00-910-802-A/200	APU - START
AMM TASK 49-13-00-910-803-A/200	APU - SHUTDOWN

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
111		Radome
223		Cockpit - Control Pedestal/Glareshield Panel (LH side)
224		Cockpit - Glareshield Panel (RH side)

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable



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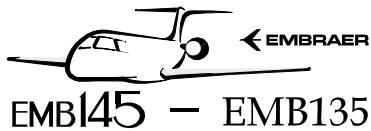
H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Cockpit/Forward fuselage I

I. Preparation

SUBTASK 841-002-A

- (1) Open the radome and lock it in a safe position to get access to the weather RTA (AMM MPP 06-30-00/100).
- (2) Set the SCAN and XMIT switches, at the weather RTA (Receiver/Transmitter antenna) base, to the OFF position ([AMM SDS 34-42-00/1](#)).
- (3) Make sure that the controls, on the weather radar controller, are in these positions:
 - (a) RADAR: OFF.
 - (b) GAIN: Fully counterclockwise (pushed in and at the MIN position).
 - (c) TILT: Set to zero degrees.
 - (d) Two range selection, TRB or RCT, as applicable, STAB, TGT, and SECT pushbuttons: Not selected.
- (4) Energize the aircraft with the External DC Power Supply ([AMM TASK 20-40-01-860-801-A/200](#)) or with APU ([AMM TASK 49-10-00-910-802-A/200](#) or [AMM TASK 49-13-00-910-802-A/200](#)).
- (5) Make sure that these systems are operational and on:
 - Integrated Computer System ([AMM SDS 31-42-00/1](#)).
 - AHRS ([AMM SDS 34-21-00/1](#)) or IRS ([AMM SDS 34-27-00/1](#)).
 - EFIS ([AMM SDS 34-22-00/1](#)).
 - Weather Radar System ([AMM SDS 34-42-00/1](#)).
- (6) Make sure that the aircraft is in the on-ground configuration.



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J. Weather Radar System - Test Procedures ([Figure 501](#)) ([Figure 502](#)) ([Figure 503](#))

SUBTASK 710-002-A

WARNING: IF YOU WILL OPERATE THE RADAR SYSTEM IN OTHER MODE THAN STANDBY WHILE THE AIRCRAFT IS ON THE GROUND, OBEY THESE PRECAUTIONS:

- POINT THE NOSE OF THE AIRCRAFT TO A DIRECTION WHERE THE ANTENNA SCAN SECTOR IS FREE OF LARGE METALLIC OBJECTS SUCH AS HANGAR OR OTHER AIRCRAFT FOR A MINIMUM DISTANCE OF 100 FEET (30 METERS), AND TILT THE ANTENNA FULLY UP.
- DO NOT OPERATE THE RADAR DURING THE REFUELING OF THE AIRCRAFT OR DURING REFUELING OPERATIONS WITHIN 100 FEET (30 METERS).
- DO NOT OPERATE IF PERSONS ARE TOO NEAR THE 270-DEGREE FORWARD SECTOR OF THE AIRCRAFT.
- OPERATING PERSONS MUST BE FAMILIAR WITH FAA AC 20-68B.

(1) Select the EFIS to show the weather radar information ([AMM SDS 34-22-00/1](#)), as follows:

(a) On the display controllers (DC-550), on the glareshield panel, push the FULL/WX pushbutton, to start the WX mode on the PFDs.

Result:

1 The PFDs show the WX inscription, in amber, on the left side.

2 The compass cards of the PFDs go to the ARC mode.

(b) On the MFDs, push the WX mode pushbutton.

Result:

1 The MFDs show the WX inscription, in amber, on the left lower corner.

(2) Do the check of the weather radar system, as follows:

NOTE: For aircraft with two radar controllers, do this check with the left (pilot) weather radar controller.

(a) Set the RADAR rotary switch, on the weather radar controller, to OFF and make sure that the aircraft is on the ground.

(b) Set the RADAR rotary switch, on the weather radar controller, to SBY.

Result:

1 The PFDs and MFDs show the weather radar indications:

• WAIT in green, on the mode field.

• After \pm 90 seconds, the WAIT inscription is replaced by the FSBY inscription, also in green.

(c) Set the RADAR rotary switch, on the weather radar controller, to WX.

(d) With the aircraft on the ground configuration, push four (4) times the STAB pushbutton in less than 3 seconds on the weather radar controller, to enter the forced standby override.

Result:

- 1 The PFD and MFD displays show:

- The WX inscription, in amber, on the mode field.
- A narrow yellow scan band in the upper part.

- (e) (Aircraft with Primus 660 weather radar) Set the RADAR rotary switch, on the weather radar controller to GMAP.

Result:

- 1 On the PFDs and MFDs, the WX inscription, in amber, stays on.

- 2 The narrow yellow scan band stays in view.

- (f) (Aircraft with Primus 660 weather radar) Set the RADAR rotary switch, on the weather radar controller to FP.

Result:

- 1 On the PFDs and MFDs, the WX inscription, in amber, stays on.

- 2 The narrow yellow scan band goes out of view.

- (g) (Aircraft with Primus 880 weather radar) Set the RADAR rotary switch, on the weather radar controller to RCT.

Result:

- 1 On the PFDs and MFDs, the WX inscription, in amber, stays on.

- 2 The narrow yellow scan band stays in view.

- (h) (Aircraft with Primus 880 weather radar) Set the RADAR rotary switch, on the weather radar controller to GMAP.

Result:

- 1 On the PFDs and MFDs, the WX inscription, in amber, stays on.

- 2 The narrow yellow scan band stays in view.

- (i) (Aircraft with Primus 880 weather radar) Set the RADAR rotary switch, on the weather radar controller to FP.

Result:

- 1 On the PFDs and MFDs, the WX inscription, in amber, stays on.

- 2 The narrow yellow scan band goes out of view.

- (j) Set the RADAR rotary switch, on the weather radar controller, to WX, and push the STAB pushbutton four (4) times in less than 3 seconds.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- ROLL OFFSET (Radar Roll Angle)
- PULL OUT GAIN KNOB TO ADJUST
- STAB KEY→NEXT

- (k) Record the ROLL OFFSET value.

- (l) Lift the knob to set the GAIN rotary control, on the weather radar controller, to the VAR position.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- ROLL OFFSET (Radar Roll Angle)
- PUSH IN GAIN KNOB WHEN DONE
- AIRCRAFT ROLL (Aircraft Roll Angle)

- (m) To adjust the ROLL OFFSET value, turn the GAIN knob.

NOTE: Make sure that the ROLL OFFSET value changes.

- (n) Adjust the ROLL OFFSET value back to the value that you recorded.

- (o) Push the GAIN knob to save the adjustment.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- ROLL OFFSET (Radar Roll Angle)
- PULL OUT GAIN KNOB TO ADJUST
- STAB KEY→NEXT

- (p) Push the STAB pushbutton to go to the next adjustment.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- PITCH OFFSET (Radar Pitch Angle)
- PULL OUT GAIN KNOB TO ADJUST
- STAB KEY→NEXT

- (q) Record the PITCH OFFSET value.

- (r) Lift the knob to set the GAIN rotary control, on the weather radar controller, to the VAR position.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- PITCH OFFSET (Radar Pitch Angle)
- PUSH IN GAIN KNOB WHEN DONE
- AIRCRAFT PITCH (Aircraft Pitch Angle)

- (s) To adjust the PITCH OFFSET value, turn the GAIN knob.

NOTE: Make sure that the PITCH OFFSET value changes.

- (t) Adjust the PITCH OFFSET value back to the value that you recorded.

- (u) Push the GAIN knob to save the adjustment.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- PITCH OFFSET (Radar Pitch Angle)
- PULL OUT GAIN KNOB TO ADJUST
- STAB KEY→NEXT

- (v) Push the STAB pushbutton to go to the next adjustment.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- ROLL GAIN (Radar Roll Gain)
- PULL OUT GAIN KNOB TO ADJUST
- STAB KEY→NEXT

- (w) Record the ROLL GAIN value.

- (x) Lift the knob to set the GAIN rotary control, on the weather radar controller, to the VAR position.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- ROLL GAIN (Radar Roll Gain)
- PUSH IN GAIN KNOB WHEN DONE
- AIRCRAFT ROLL (Aircraft Roll Gain)

- (y) To adjust the ROLL GAIN value, turn the GAIN knob.

NOTE: Make sure that the ROLL GAIN value changes.

- (z) Adjust the ROLL GAIN value back to the value that you recorded.

- (aa) Push the GAIN knob to save the adjustment.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- ROLL GAIN (Radar Roll Gain)
- PULL OUT GAIN KNOB TO ADJUST
- STAB KEY→NEXT

- (ab) Push the STAB pushbutton to go to the next adjustment.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- PITCH GAIN (Radar Pitch Gain)
- PULL OUT GAIN KNOB TO ADJUST
- STAB KEY→NEXT

(ac) Record the PITCH GAIN value.

(ad) Lift the knob to set the GAIN rotary control, on the weather radar controller, to the VAR position.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- PITCH GAIN (Radar Pitch Gain)
- PUSH IN GAIN KNOB WHEN DONE
- AIRCRAFT PITCH (Aircraft Pitch Gain)

(ae) To adjust the PITCH GAIN value, turn the GAIN knob.

NOTE: Make sure that the PITCH GAIN value changes.

(af) Adjust the PITCH GAIN value back to the value that you recorded.

(ag) Push the GAIN knob to save the adjustment.

Result:

- 1 The PFD and MFD displays show these inscriptions on the weather radar image:

- PITCH GAIN (Radar Pitch Gain)
- PULL OUT GAIN KNOB TO ADJUST
- STAB KEY→SAVE

(ah) Push the STAB pushbutton to save and exit the stabilization setup mode.

WARNING: MAKE SURE THAT YOU SET THE SCAN SWITCH TO THE ON POSITION AND NOT THE XMIT SWITCH. IF YOU SET THE XMIT TO THE ON POSITION, THE TRANSMITTER IS TURNED ON AND RADIATES X-BAND MICROWAVE ENERGY.

(ai) Set the SCAN switch, at the weather RTA (Receiver/Transmitter Antenna) base, to the ON position.

Result:

- 1 The weather radar antenna starts to scan horizontally.

(aj) Set the RADAR rotary switch, on the weather radar controller, to TST.

Result:

- 1 The PFDs and MFDs show these weather radar indications:

NOTE: The antenna scan is synchronized with the scan shown on the displays.

- TEST annunciator, in green, on the mode field.
- Indication 50 on the range mean line.
- A 120-degree circular sector with these colors, from down up:
 - Scan from the left to the right: gray, magenta, gray, cyan, yellow, green, black, and yellow.
 - Scan from the right to the left: black, green, yellow, red, yellow, magenta, gray, and black.
- The RADAR FAIL message is shown in the center yellow band.

- (ak) On the weather radar controller, push the range selection pushbuttons two times.

Result:

- 1 On the PFDs and MFDs, the range stays 50 NM.

- (al) (Aircraft with Primus 660 weather radar) On the weather radar controller, lift and set the GAIN rotary control to the VAR position.

Result:

- 1 The VAR inscription, in amber, is shown on the PFDs and MFDs displays.

- (am) (Aircraft with Primus 660 weather radar) Push the GAIN rotary control and set it to the MIN position.

Result:

- 1 The VAR inscriptions go out of view on the PFD and MFD displays.

- (an) Push the TGT pushbutton, on the weather radar controller.

Result:

- 1 The PFDs and MFDs displays show the TGT green inscription on the left lower corner (Target Alert Field).

- (ao) Push the TGT pushbutton again.

Result:

- 1 The TGT inscription goes out of view on the Target Alert Field.

- (ap) Push the SECT pushbutton, on the weather radar controller.

Result:

- 1 The PFD and MFD displays show:

- The shown scan is decreased to the 60-degree sector.
- The scan cycle changes to one at each four (4) seconds.
- The system failure indications, on the center yellow band, go out of view.

- (aq) Push the SECT pushbutton again.

Result:

- 1 The shown scan goes back to the 120-degree sector.

- (ar) On the weather radar controller, set the RADAR rotary switch to the WX position.

Result:

- 1 The PFDs and MFDs displays show:

- The WX inscription, in amber, on the mode field.
- The range annunciator in white.

NOTE: If the FSBY inscription is shown on the PFDs and MFDs displays, push the STAB pushbutton four (4) times in less than 3 seconds. This will change the FSBY inscription to the WX inscription, in amber, on the mode field.

- (as) On the weather radar controller, use the range selection pushbuttons to increase and decrease the selected range.

Result:

- 1 The selected range changes on the PFDs and MFDs displays.

- (at) (Aircraft with Primus 880 weather radar) With the range selection pushbuttons, set a range of 150 NM, set the RADAR rotary switch to the RCT position, and lift and set the GAIN rotary control to the VAR position.

Result:

- 1 A cyan band is shown in the upper portion of the PFD and MFD displays.

- (au) (Aircraft with Primus 660 weather radar) With the range selection pushbuttons, set a range of 150 NM, push the RCT pushbutton, and lift and set the GAIN rotary control to the VAR position.

Result:

- 1 A cyan band is shown in the upper portion of the PFD and MFD displays.

- 2 A narrow yellow scan band is shown on the cyan band.

- (av) (Aircraft with Primus 880 weather radar) Set the RADAR rotary switch to the WX position.

Result:

- 1 The cyan band goes out of view on the PFD and MFD displays, and the VAR inscription comes into view in amber.

- (aw) (Aircraft with Primus 660 weather radar) On the weather radar controller, push the RCT pushbutton again.

Result:

- 1 The cyan band goes out of view on the PFD and MFD displays, and the VAR inscription comes into view in amber.

- 2 The narrow yellow scan band stays in view.

- (ax) Push the GAIN rotary control.

Result:

- 1 The VAR inscription goes out of view on the PFDs and MFDs displays.

- (ay) On the weather radar controller, push the STAB pushbutton.

Result:

- 1 The STAB inscription, in amber, comes into view on the MFD displays.

- 2 On the weather radar controller, the OFF inscription comes on above the STAB pushbutton.
 - (az) Push the STAB pushbutton again.
 Result:
 1 The STAB inscription goes out of view on the MFDs.
 2 The OFF inscription, on the weather radar controller, goes out of view.
- (ba) On the weather radar controller, push the SECT pushbutton.
 Result:
 1 The PFDs and MFDs displays show:
 - The shown scan decreases to the 60-degree sector.
 - Two marks come into view on the 150-NM range line to limit the scan angle.
 - The narrow yellow band, in the display upper portion, stays in view.
- (bb) Push the SECT pushbutton again.
 Result:
 1 The shown scan goes back to the 120-degree sector.
 2 On the PFDs, the two marks on the 150-NM range line go out of view.
 3 On the MFDs, the two marks change to 120 degrees.
 4 The narrow yellow band, in the display upper portion, stays in view.
- (bc) Set the RADAR rotary switch, on the weather radar controller, to the GMAP position.
 Result:
 1 The PFDs and MFDs displays show the WX inscription, in amber, and the narrow yellow band stays in view.
- (bd) On the weather radar controller, lift and set the GAIN rotary control to the VAR position.
 Result:
 1 The PFDs and MFDs displays show the VAR inscription, and the narrow yellow band stays in view.
- (be) Push the GAIN rotary control.
 Result:
 1 The VAR inscription goes out of view on the PFDs and MFDs displays.
- (bf) Push the TGT pushbutton, on the weather radar controller.
 Result:
 1 On the PFDs and MFDs, the TGT inscription is not shown.
- (bg) On the weather radar controller, set the RADAR rotary switch to the FP position.

Result:

- 1 The PFDs and MFDs displays show:

- The WX inscription in amber, on the mode field.
- The TGT inscription in green.
- The narrow yellow band goes out of view.

(bh) On the weather radar controller, push the right and/or left range selection pushbuttons.

Result:

- 1 On the PFDs and MFDs displays, the range indications are shown as selected and the range goes up to 500 NM.

(bi) Push the SECT pushbutton, on the weather radar controller.

Result:

- 1 The shown scan decreases to the 60-degree sector.

- 2 Two marks come into view on the range line to limit the scan angle.

(bj) Push the SECT pushbutton again.

Result:

- 1 The shown scan goes back to the 120-degree sector.

- 2 On the PFDs, the two marks go out of view.

- 3 On the MFDs, the two marks change to 120 degrees.

(bk) On the weather radar controller, set the RADAR rotary switch to OFF.

(bl) (Aircraft with weather radar controller installed on the control pedestal) On the panel lights, on the left side of the glareshield panel, change the PEDESTAL knob setting.

Result:

- 1 The brightness of the inscriptions, on the weather radar controller, also changes.

(bm) (Aircraft with weather radar controller installed on the glareshield RH) On the panel lights, on the right side of the glareshield panel, change the COPILOT knob setting.

Result:

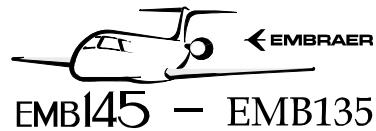
- 1 The brightness of the inscriptions, on the weather radar controller, also changes.

(3) (Aircraft with two radar controllers) Do steps (1) and (2) again with the right (copilot) weather radar controller.

K. Follow-on

SUBTASK 842-002-A

- (1) Make sure that the controls, on the weather radar controller, are in these positions:
 - (a) RADAR: OFF.
 - (b) GAIN: Fully counterclockwise (pushed in and at the MIN position).
 - (c) TILT: Set to zero degrees.

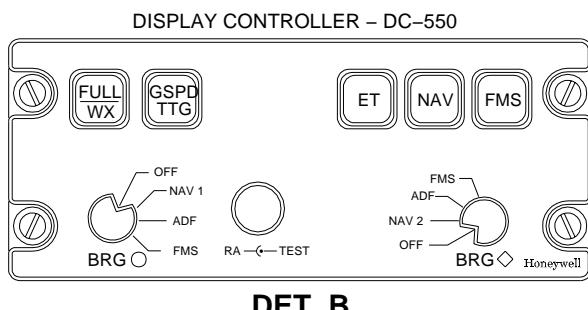
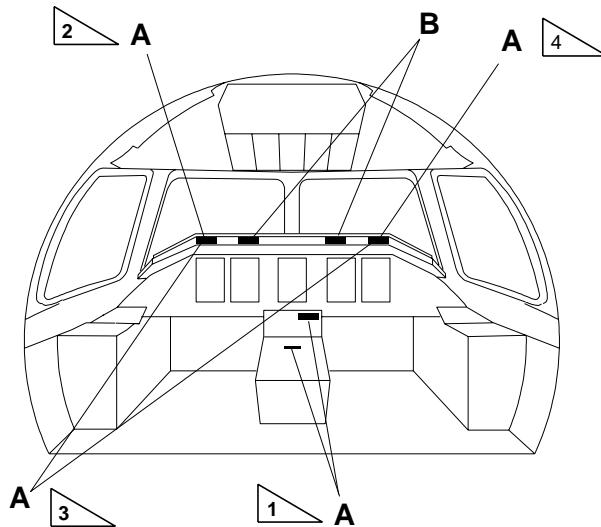


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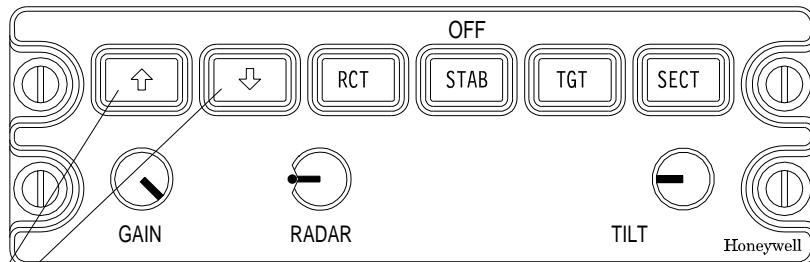
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- (d) Two range selection, TRB or RCT, as applicable, STAB, TGT, and SECT pushbuttons: Not selected.
- (2) If the aircraft is energized with External DC Power Supply, de-energize the aircraft ([AMM TASK 20-40-01-860-801-A/200](#)).
- (3) If the aircraft is energized with APU, de-energize the aircraft ([AMM TASK 49-10-00-910-803-A/200](#) or [AMM TASK 49-13-00-910-803-A/200](#)).
- (4) Set the XMIT switch, at the weather RTA (Receiver/Transmitter Antenna) base, to the ON position ([AMM SDS 34-42-00/1](#)).
- (5) Make sure that the SCAN switch, at the weather RTA (Receiver/Transmitter Antenna) base, is set at the ON position ([AMM SDS 34-42-00/1](#)).
- (6) Close the radome and lock it (AMM MPP 06-30-00/100).

EFFECTIVITY: ALL
Weather Radar Controls
Figure 501

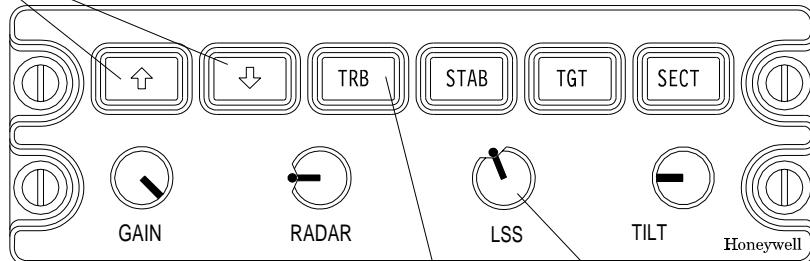


WEATHER RADAR CONTROLLER – MODEL WC-660



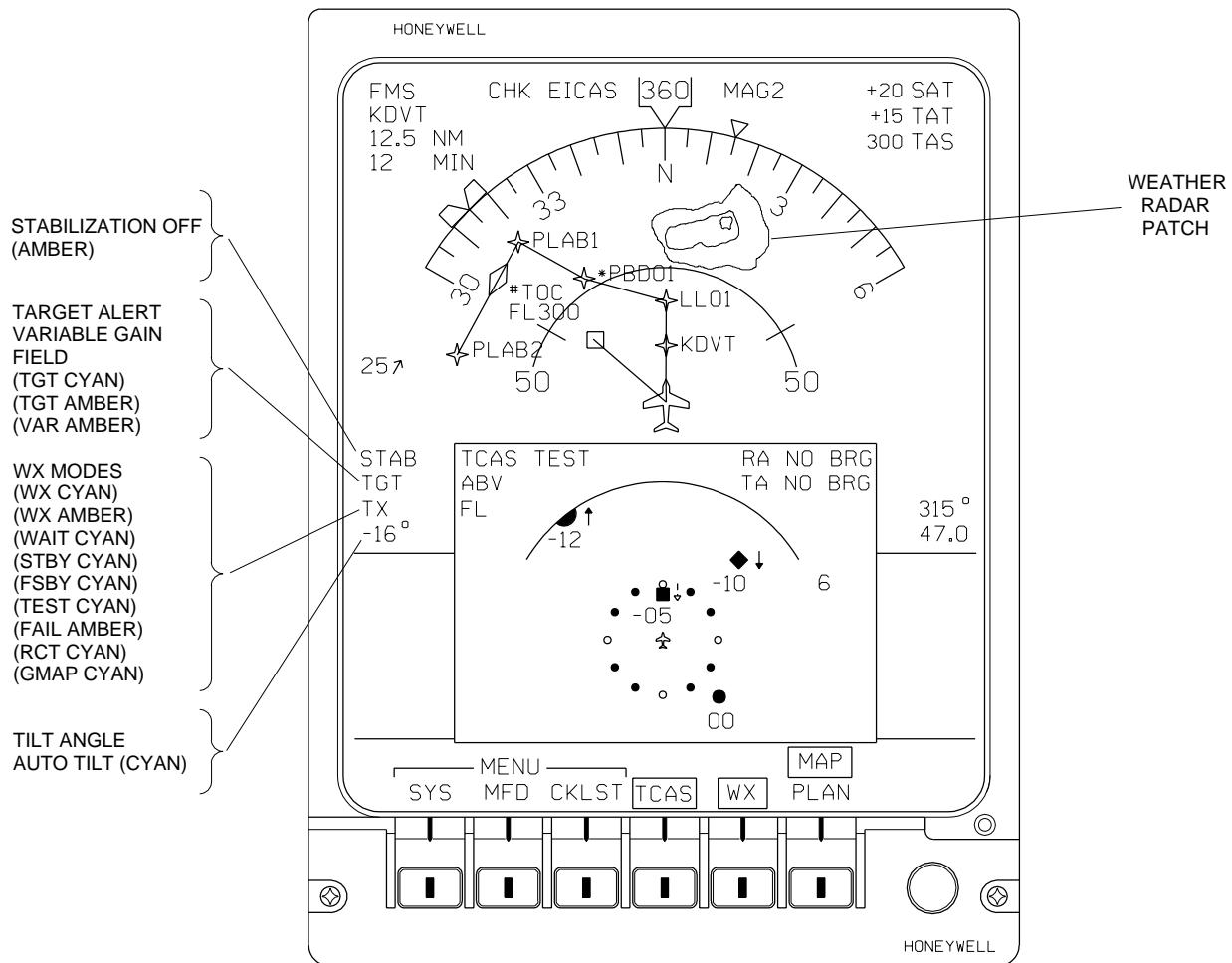
RANGE SELECTION
PUSHBUTTONS

WEATHER RADAR CONTROLLER – MODEL WC-880

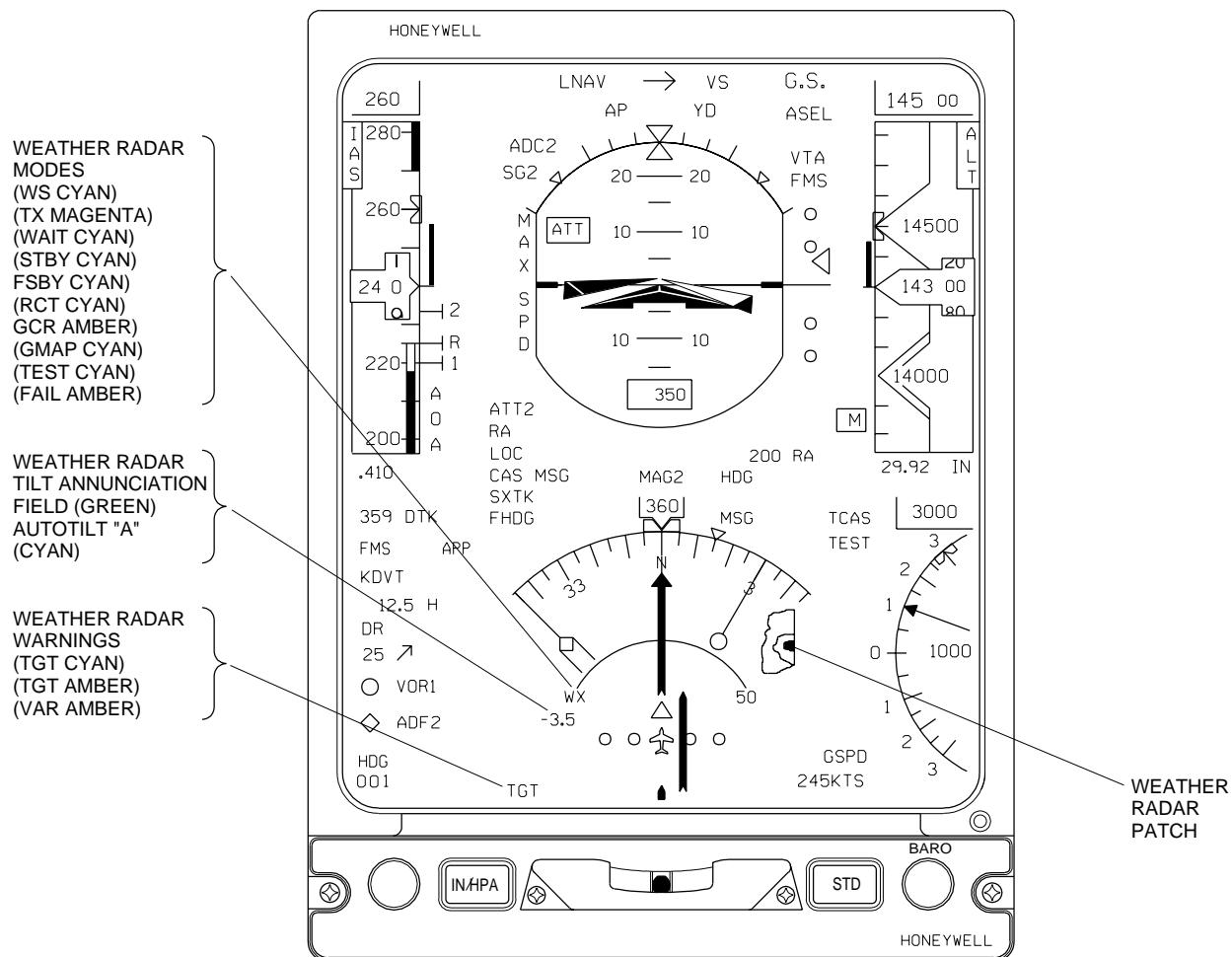


- 1 AIRCRAFT WITH ONE RADAR CONTROLLER INSTALLED ON THE CONTROL PEDESTAL
- 2 AIRCRAFT WITH ONE RADAR CONTROLLER INSTALLED ON THE GLARESHIELD (LH)
- 3 AIRCRAFT WITH TWO RADAR CONTROLLERS
- 4 AIRCRAFT WITH ONE RADAR CONTROLLER INSTALLED ON THE GLARESHIELD (RH)
- 5 AIRCRAFT EQUIPPED WITH LSS
- 6 AIRCRAFT EQUIPPED WITH WEATHER RADAR MODEL WX-880

145AMM340246D.MCE

EFFECTIVITY: ALL
MFDs - Weather Radar Indications
Figure 502


145AMM34018.MCE

EFFECTIVITY: ALL
PFDs - Weather Radar Indications
Figure 503


145AMM340185.MCE A