



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

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Attachment 9 – Aircraft Operations Manuals Vol. 1 & 2 [Excerpt]

OPERATIONAL FACTORS

DCA19CA081



AOM I

ERJ 170

**Aircraft Operating
Manual**

Volume 1

Revision 23

Manual Owner: Director of Operations

FAA Approved

3-130.5 **Reduced Vertical Separation Minimum (RVSM) Airspace**

General

A full review of RVSM must include FOM CH 7, NAV/COM/ATC.

In level flight, it is essential that the airplane be flown at the assigned flight level. Except in an emergency or contingency situation, do not intentionally depart from the assigned flight level without a positive clearance from ATC.

Compass Airlines' area of operations, RVSM airspace includes Canada and the domestic U.S.

RVSM Standards

A complete review of this topic includes FOM CH 7, NAV/COM/ATC. To operate in RVSM airspace, the following must be complied with:

- Review MEL items to ensure that no RVSM restrictions apply. Those MELs adversely affecting RVSM operations will be identified by the statement "RVSM operations not authorized" in the Flight Crew Operating Procedures column. The following equipment must be operational for entry into RVSM airspace:
 - 2 RVSM compliant air data systems (ADS);
 - 1 autopilot with altitude hold mode;
 - 1 altitude alerter;
 - 1 transponder.
- Avoid flight in RVSM airspace if any of these systems fail prior to entry. In this case, develop an alternate plan (e.g., secondary route, alternate altitude, etc.). Contact ATC and Dispatch if any of these systems fail while in RVSM airspace.
- Review reported and forecast weather conditions particular to RVSM operations. Pay particular attention to forecast turbulence and mountain wave activity, en route thunderstorms, and temperatures along the route of flight. Plan to avoid areas of greater than moderate turbulence.

-
- In level cruise, it is essential that the airplane be flown at the assigned flight level. Except in an emergency or contingency situation, do not intentionally depart from the assigned flight level without a positive clearance from ATC.
 - During transitions between flight levels, do not overshoot or undershoot the assigned flight level by more than 150 feet. It is recommended that the level off be accomplished using the altitude capture feature of the autopilot.
 - The autopilot should be operative and engaged during level cruise, except for circumstances such as the need to re-trim the airplane or when it must be disengaged due to turbulence.

RVSM Procedures

Prior to Entry into RVSM Airspace:

- Ensure that all primary and standby altimeters are set to 29.92 in. Hg./1013 hPa.

At the Top of the Climb:

- Ensure that the two primary altimeters agree within the "Altimeter Miscompare Tolerances" table (AOM I, 5-6.1).
- Note the readings for both primary altimeters and the standby altimeter on an available space on the flight plan.

After Entry into RVSM Airspace:

- Ensure that the altimeters are crosschecked at least hourly. The normal pilot scan of flight deck instruments should suffice for altimeter crosschecking.

While in RVSM Airspace, Contact ATC if:

- The airplane is unable to maintain its assigned flight level within 200 feet.
- The primary altimeters differ more than the "Altimeter Miscompare Tolerances" table (AOM I, 5-6.1).
- Turbulence (greater than moderate) or MWA impacts the ability to maintain the assigned flight level.

Special Procedures for In Flight Contingencies

The following general procedures are intended as guidance only. Although all possible contingencies cannot be covered, they provide for cases of inability to maintain assigned level due to:

- Weather
- Airplane performance
- Pressurization failure

The PIC's judgment shall determine the sequence of actions to be taken, taking into account specific circumstances and ATC shall render all possible assistance.

If an airplane is unable to continue flight in accordance with its ATC clearance, a revised clearance shall, whenever possible, be obtained prior to initiating any action, using a distress or urgency signal if appropriate. If prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time.

Altitude Deviations for Contingencies NOT Related to Weather

If unable to maintain level flight (non-weather related):

- Obtain a revised clearance from ATC.
- Maintain cleared altitude, to the extent possible, while evaluating the situation.
- Watch for conflicting traffic both visually and by reference to TCAS.
- Turn on all exterior lights.

Altitude/Course Deviations Due to Weather

For both Mountain Wave Activity (MWA) and severe turbulence encountered in RVSM airspace, an additional concern is the sensitivity of TCAS when other airplane fly directly above or below your position. Severe turbulence and MWA can cause large abrupt changes in altitude and/or attitude.

If unable to maintain track due to weather, turbulence, or MWA:

- Contact ATC and report experiencing MWA (indicate magnitude and location) and/or severe turbulence, or need to deviate for weather.
- If the controller calls approaching or converging traffic at adjacent altitudes and the airplane is experiencing difficulty in maintaining altitude (deviations of 200 feet or greater), request radar vectors for traffic avoidance.
- Request altitude change and/or re-route, if desired.
- Report to ATC when clear of the MWA or severe turbulence.

Failure of RVSM Required Equipment

If one primary altimeter or the transponder(s) fails while operating in RVSM airspace:

- Contact ATC and request authority to continue.
- If one primary altimeter fails, cross check the other primary altimeter with the stand-by altimeter. If unable to confirm primary altimeter accuracy, request clearance out of RVSM airspace unless operational situation dictates otherwise.

If the autopilot, the altitude alerter, and/or both primary altimeters fail:

- Contact ATC and request clearance out of the RVSM airspace unless operational situation dictates otherwise.

TCAS Operation in RVSM Airspace

Under certain conditions in RVSM airspace, there is the potential for some versions of TCAS II to issue TAs and RAs during normal operations when airplane are maintaining required separation. Very few RAs are expected to occur in RVSM airspace during normal operations but a TA may occur when an airplane passes in close proximity to another at an adjacent flight level.

Moderate and severe turbulence can induce airplane motion which TCAS can interpret as a climb or descent. These vertical speed changes can result in TCAS projecting the vertical separation to be less than 800 feet at the closest point of approach, which can result in an RA being issued if the airplane is in close proximity to another airplane at an adjacent altitude.

The following are recommended operating practices that will minimize disruptions caused by the issuance of unnecessary TAs and RAs during RVSM operations:

- TCAS should be operated in the TA/RA mode during all operations in RVSM airspace and transition areas.
- Climb and descent rates in RVSM airspace and transition areas should be limited to 1000 fpm when operating within five NM and ± 2000 feet of other airplane to minimize the generation to TAs and RAs.
- Finally, if an RA is encountered, it must be followed. Following the flight, submit a Crew Report detailing the incident as required by the FOM.

RVSM Reporting Requirements

RVSM-related equipment malfunctions (or suspected malfunctions) must be reported in the Airplane Maintenance Logbook. If a malfunction of the equipment occurred in RVSM airspace, the maintenance logbook write-up must include the comment, "In RVSM Airspace". This comment is essential to track these component failures that occur in RVSM airspace and enable maintenance to satisfy the FAA reporting requirements.

Equipment Covered by RVSM Reporting:

- Any component of the primary altimetry system (altimeter, air data computer, pitot static, etc.) and primary altimetry equipment errors. Refer to Altimeter Miscompare Tolerances (AOM I, 5-6.1).
- Any component of the auto flight system (e.g., autopilot, AFCS, FMC, altitude alerter, etc.).
- Air Traffic Control transponder system (including altitude Mode S system).
- Traffic Collision Avoidance System malfunctions. (TCAS).

Air Safety Report

In addition to the maintenance logbook write-up, if any of the following occur, submit a Crew Report detailing the circumstances:

- Altitude error of ± 300 feet.
- RVSM contingency procedures used during flight.

Note

Submission of the Crew Report within the 24-48 hour limit is essential to ensure reporting to the FAA within the 72-hour requirement.

3-134 TURBULENT AIR PENETRATION

A complete coverage of this subject should include a review of the FOM, CH 8, Flight Planning.

It is Compass Airlines' policy to avoid severe turbulence if at all possible. Sometimes, however, this becomes impossible and turbulence with intensities greater than moderate may be encountered. When the airplane is operated at its optimum altitudes based on weight, margins available to the buffet boundary may be greater than .5g provided by the MAXIMUM AND OPTIMUM ALTITUDE TABLE. Because of this, buffet and control margins will be adequate for most conditions. However, if moderate or greater turbulence is anticipated or encountered, operating at least 4,000 feet lower is advisable.

Procedures

Flight through severe turbulence must be avoided, if possible. If not possible, reduce altitude to increase buffet margin.

The recommended procedures for turbulent air penetration are:

1. AIRSPEED
 - a. Below 10000 ft. 250 KIAS
 - b. At or above 10000 ft. 270 KIAS/0.76 M (whichever is lower)
 - Severe turbulence will cause large and often rapid variations in indicated air-speed. Do not chase the airspeed.
2. AUTOPILOT
 - The autopilot should be engaged when flying in severe turbulence.
 - At pilot's discretion, if the crew reverts to manual flight in severe turbulence, follow the guidance below:
3. ATTITUDE
 - Maintain level wings and pitch attitude. Use attitude indicator as the primary instrument. Do not use sudden large control inputs.

4. PITCH TRIM

- Maintain control of the airplane with the elevators. After establishing the trim setting for penetration speed, do not change pitch trim.

5. ALTITUDE

- Large altitude variations are possible in severe turbulence, do not chase altitude. Allow altitude and airspeed to vary and maintain attitude.

6. THRUST SETTING

- If severe turbulence cannot be avoided, disconnect autothrottle and make an initial thrust setting for the target airspeed. Change thrust setting only in case of unacceptable airspeed variation.

7. Other factors to consider in anticipation of turbulent air are:

- At high altitude, you may experience momentary mach buffet. It should not be confused with low speed buffet.
- Notify the cabin crew of the expected turbulence.
- Verify flight deck crewmembers (including XCM) have seat belts and shoulder harnesses fastened.
- Place the FSTN BELTS switch to ON and make an appropriate PA to the passengers.

Note

Do not extend flaps except for approach and landing.

Turbulence - Real or Only Forecast?

Be aware of turbulence reports and the tropopause level. Climbing into known turbulence does not make good sense. Likewise, remaining at a lower altitude solely because of an hours' old turbulence forecast is equally poor headwork. Utilize ATC, other airplanes, company and radio communication to determine whether or not forecast turbulence really does exist.

Ice Protection

If the ice protection system is activated, the fuel flow will increase by 6-10%.

Trim the Airplane

Proper Trim Saves Fuel. An airplane in steady cruising flight may require some degree of lateral and/or directional trim inputs to minimize drag. The trim requirement can arise from out-of-rig flight controls, internal load distribution, fuel unbalance, or engine thrust setting imbalance. The degree of trim inputs required will depend on two basic factors:

1. The degree of controls mis-rig, lateral unbalance, etc., and
2. The trim technique employed.

In particular, avoid an out-of-trim elevator. To prevent over-frequent trim actuation, the autopilot will hold a considerable amount of elevator deflection before trimming the stabilizer. Periodically disconnecting the autopilot and checking elevator trim will help ensure that the elevator is properly trimmed.

The following technique should be used for trimming the airplane in cruise:

1. Ensure the speed has stabilized and thrust is set symmetrically.
2. Check for fuel imbalance and re-balance if necessary.
3. Press the AUTO PILOT/FD TCS button.
4. Check the stabilizer is trimmed for level flight.
5. Zero the aileron and rudder trim.

4-1.1 **Circuit Breakers**

Emergency and abnormal procedures assume that the flight crew has checked all circuit breakers and placed all system controls in the normal configuration for the phase of flight. The flight crew will check circuit breakers and test lights when appropriate.

Refer to the FOM and the QRH for more information regarding the resetting of circuit breakers.

4-1.2 **Emergency Response Philosophy**

Full knowledge of the Memory Items is mandatory. Crewmembers must also be familiar with which items are on the Quick Reference Checklist (QRC) so the correct document is called for in an emergency/abnormal situation.

Compass Airlines' procedures and policy recognize the following:

1. Continuing to fly the airplane is the most important single consideration in every situation.
2. Hurried action, when an emergency occurs, can result in a more serious situation.
3. Humans will not always remember all procedural steps in their exact, specified order under stress.
4. Whenever smoke, fumes, or unidentified odors are detected in the airplane or are a likelihood, the flight crew must don oxygen masks and smoke goggles. The PIC will determine when conditions are such that the masks and goggles can be safely removed.
5. If loss of cabin pressurization is evident, the flight crew must don oxygen masks. The PIC will determine when conditions are such that the mask can be safely removed.
6. It is not possible to develop specific procedures to cover all possible situations.

5-14.4 **Lightning Strikes**

A complete review of this subject includes a review of the Flight Planning chapter in the FOM.

Even though the airplane is adequately protected against lightning strike effects, operating procedures should be established in an attempt to avoid such areas.

Avoid penetration of thunderstorms. In flight lightning avoidance is closely associated with thunderstorm avoidance. Maintain visual contact with thunderstorms during the daytime and lightning at night.

Check the radar for precipitation, review weather information, examine pilot reports and coordinate with ATC to avoid areas of significant weather.

Even with a good weather report received and understood, pay close attention to those storms that develop rapidly along the route in a given area and that cannot be predicted. While en route, constantly update the previous weather briefing through radio contact and airborne equipment for actual storm avoidance.

Remember that radar detects only liquid droplets, not the cloud itself.

Only rain suspended in the cloud will produce a radar echo, which may lead to occasional encounters with hail and lightning.

Circumnavigate the detected thundercloud or area, if possible, by more than 25 miles when traffic conditions permit.

Be aware that lightning can strike an airplane miles away from the extreme side of a developed thunderstorm. Reports of airplane receiving strikes in clear air at 25 miles or more from the nearest storm are common.

The following paragraphs summarize the conditions in which strikes are most common:

- Meteorological conditions: incident reports show that an airplane must be within or beneath a cloud to receive a strike, or in or near regions of precipitation. Incident reports show that in over 80% of the strikes, the airplane was within a cloud and experiencing some precipitation and turbulence. But other strikes may occur in a cloud where there is no precipitation nearby, in clear air reasonably distant from a thundercloud, during snowstorms and in clouds over erupting volcanoes. Flight through or in the vicinity of cold front, warm front, stationary front, unstable air or squall line are indicators of imminent lightning strikes. Incident reports also show that lightning strikes occur most commonly under light or heavy turbulence conditions.
- Flight regime: Takeoff, climb, level flight, descent or approach.
- Altitude: strikes are more common between 5,000 and 20,000 ft., but may occur at virtually all flight altitudes. Lightning strike incidents at lower altitudes are far more frequent since at higher altitudes airplanes can divert around thunderclouds with greater ease.
- Outside air temperature: most strike incidents have occurred when the airplane is flying in temperatures near or at freezing level.
- Strikes may also occur at temperatures as high as 25°C, or as low as -45°C.



AIRPLANE OPERATIONS MANUAL VOLUME 2

Embraer S.A.

COMPASS AIRLINES

This manual is applicable to the EMBRAER 170 airplanes LR model equipped with CF34-8E5 engines and the EMBRAER 175 airplanes LR model equipped with CF34-8E5 engines, operating under FAA certification.

THIS PUBLICATION IS INCOMPLETE WITHOUT AIRPLANE OPERATIONS MANUAL AOM-1502
VOLUME 1.

**AOM-1502-013
DECEMBER 10, 2003
REVISION 18 - JULY 02, 2014**

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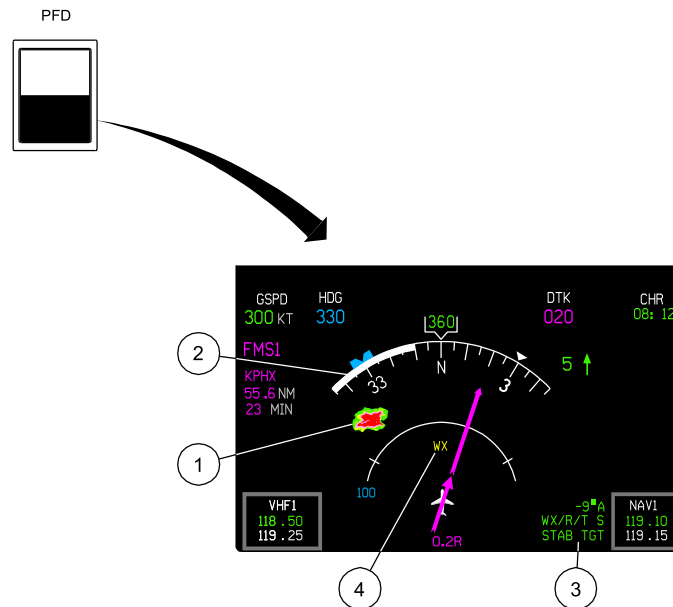


**EMBRAER 170
175**

**AIRPLANE
OPERATIONS
MANUAL**

SYSTEMS DESCRIPTION
FLIGHT
INSTRUMENTS/COMM/NAV/FMS

HSI WEATHER RADAR INDICATIONS



EM170AOM140291A.DGN

1 - WEATHER RADAR RETURNS

- Displays target in colors.
- WX mode: the color indicates rain intensity in order of increasing 'intensity: green, yellow, red and magenta.
- RCT mode: attenuation is too high, hiding possible severe weather areas (cyan).
- GMAP mode: color indicates surface information: black, cyan, yellow and magenta.
- TURB mode: areas of potentially hazardous turbulence (white).

2 - ANTENNA POSITION INDICATOR

- Indicates that antenna scan is active.

3 - WEATHER RADAR ANNUNCIATIONS

14-09-05

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REVISION 18

Controls and Indications

Page 29

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- First line:
 - CCD inner knob icon: tilt angle is modifiable.
 - Tilt angle readout: displays the tilt angle.
 - ACT annunciation: ACT is an active submode.
 - Fault code data (entire line): fault has been detected.
- Second line:
 - Weather radar mode annunciation:
 - GREEN (WX): normal WX.
 - GREEN (WX/R): normal WX with RCT.
 - GREEN (WX/T): normal WX with TURB.
 - GREEN (WX/R/T): normal WX with RCT and TURB.
 - GREEN (WX/TX): Weather transmitting, but not selected for display on the PFD or MFD, when the airplane is in air.
 - GREEN (GMAP): GMAP mode.
 - GREEN (FSBY): forced standby.
 - GREEN (TEST): test mode and no faults.
 - AMBER (WX/TX): Weather transmitting, but not selected for display on the PFD or MFD, when the airplane is on ground.
 - AMBER (WX CTRL): invalid WX control bus.
 - AMBER (FAIL): failure is detected.
 - AMBER (OVRNG): MAP range greater than 300 NM.
 - WHITE (WX OFF): WX is OFF.
 - WHITE (WAIT): power up.
 - WHITE (STBY): normal standby.
 - WHITE (S): slave mode is active.
- Third line:
 - Stabilization annunciation: radar stabilization is inhibited.
 - Target and gain mode annunciation.
 - GREEN (TGT): TGT selected.
 - FLASHING AMBER (TGT): TGT selected and alert condition.



SYSTEMS DESCRIPTION
FLIGHT
INSTRUMENTS/COMM/NAV/FMS

The diagram illustrates the MFD (Main Flight Display) interface, showing various flight parameters and controls. The display is divided into several sections:

- Top Section:** Displays weather and radar information. It includes a heading scale (0 to 360 degrees) and a distance scale (0 to 100 NM). Key elements include:
 - Weather:** WX/R/T S (Weather/Route/Status), STAB TGT (Stability Target), and LX (Landing). The display shows a green radar return (15) and a red radar return (14).
 - Flight Data:** WPT (Waypoint), DIST (Distance), ETE (Estimated Time Enroute), and FUEL (Fuel). The display shows the next waypoint is ZUN (13) at a distance of 55.6 NM, with an estimated time enroute of 01:32. The fuel level is 11.4 (12).
 - TCAS (Traffic Alert and Collision Avoidance System):** Displays TA ONLY (Traffic Alert Only), FLT LVL (Flight Level), and EXPANDED (Expanded). The display shows a traffic alert for ZUN (11) at a flight level of 300 KTS (10).
- Middle Section:** Displays system controls. It includes:
 - FSBY OVRD (Flight Safety By-Overrid):** A checkbox (15) for overriding flight safety.
 - WX (Weather):** A green dot (12) indicating weather status.
 - GMAP (Ground Map):** A button (11) for displaying the ground map.
 - STBY (Standby):** A button (10) for standby mode.
 - Off:** A button (9) for turning off the display.
 - SECT (Sector):** A button (8) for selecting a sector.
 - STAB Off (Stability Off):** A button (7) for turning off stability.
 - VAR Gain (Variable Gain):** A slider (6) for adjusting the variable gain, currently set to 92 (5).
 - TGT (Target):** A checked checkbox (4) for target mode.
 - RCT (Route Control):** A checked checkbox (3) for route control.
 - ACT (Active):** A checked checkbox (2) for active mode.
 - TURB (Turbulence):** A checked checkbox (1) for turbulence.
 - LX (Landing):** A checkbox (15) for landing mode.
 - CLR TST (Clear Test):** A checkbox (14) for clearing test results.

The diagram also shows a small inset display (MFD) in the top left corner, which is connected to the main display by a curved arrow.

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1 - WEATHER RADAR RETURNS

- Displays target in colors.
- WX mode: the color indicates rain intensity. In increasing order of intensity: green, yellow, red and magenta.
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- GMAP mode: color indicates surface information: black, cyan, yellow and magenta.
- TURB mode: areas of potentially hazardous turbulence (white).

2 - TARGET ALERT CHECKBOX

- Enables and disables the radar target feature. Can only be selected in the WX mode and at selected ranges of 200 NM or less.

3 - RAIN ECHO ATTENUATION COMPENSATION TECHNIQUE CHECKBOX

- Enables REACT function in all modes, except GMAP.

4 - ALTITUDE COMPENSATED TILT CHECKBOX

- Enables automatic adjustment of the antenna tilt in relation to the altitude and selected range.

5 - TURBULENCE DETECTION CHECKBOX

- Enables the turbulence function only in the WX mode and at selected ranges of 50 NM or less.

6 - GAIN INDICATION DISPLAY

- Indicates receiver sensitivity level from 0 to 100.

7 - RECEIVER GAIN CHECKBOX

- Enables manual variation of the receiver sensitivity.

8 - ANTENNA STABILIZATION CHECKBOX

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**EMBRAER 170
175**

**AIRPLANE
OPERATIONS
MANUAL**

SYSTEMS DESCRIPTION
FLIGHT
INSTRUMENTS/COMM/NAV/FMS

- Enables/disables automatic antenna stabilization.
- An amber STAB label is displayed within the weather box when automatic antenna stabilization is disabled.

9 - SECTOR SCAN CHECKBOX

- Enables the sector scan function for both pilots' displays.

10 - OFF MODE

- Turns off the weather mode, provided OFF is selected in both weather radar virtual controllers.
- In flight only, a single virtual controller selected to OFF operates in SLAVE mode.

11 - STANDBY MODE

- Selects the radar system into a standby mode, provided STBY is selected in both weather radar virtual controllers.
- A green FSBY label is displayed within the weather box when forced standby is active, on the ground.

12 - GROUND MAPPING MODE

- Enables ground mapping mode.

13 - RADAR MODE

- In flight, activates the radar mode.

14 - FORCED STANDBY OVERRIDE

- Enables WX on the ground, when selected on both pilots' virtual control panel.

NOTE: Selection of Antenna Stabilization checkbox (STAB OFF) 4 times in less than 3 seconds enables the forced Standby Override function (FSBY OVRD).

15 - WEATHER RADAR ANNUNCIATIONS

- First line:
 - CCD inner knob icon: tilt angle is modifiable.

AOM-1502-013

14-09-05

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REVISION 18

Controls and Indications

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- Tilt angle readout: displays the tilt angle.
- ACT annunciation: ACT is active.
- Fault code data (entire line): fault has been detected.
- Second line:
 - Weather radar mode annunciation:
 - GREEN (WX): normal WX.
 - GREEN (WX/R): normal WX with RCT.
 - GREEN (WX/T): normal WX with TURB.
 - GREEN (WX/R/T): normal WX with RCT and TURB.
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 - GREEN (FSBY): forced standby.
 - GREEN (TEST): test mode and no faults.
 - AMBER (WX CTRL): invalid WX control bus.
 - AMBER (FAIL): failure is detected.
 - AMBER (OVRNG): MAP range greater than 300 NM.
 - WHITE (WX OFF): WX is OFF.
 - WHITE (WAIT): power up.
 - WHITE (STAB): STAB OFF function selected.
 - WHITE (STBY): normal standby.
 - WHITE (S): slave mode is active.
- Third line:
 - Stabilization annunciation: radar stabilization is inhibited.
 - Target and gain mode annunciation.
 - GREEN (TGT): TGT selected.
 - FLASHING AMBER (TGT): TGT selected and alert condition.
 - AMBER (VAR): variable gain selected.

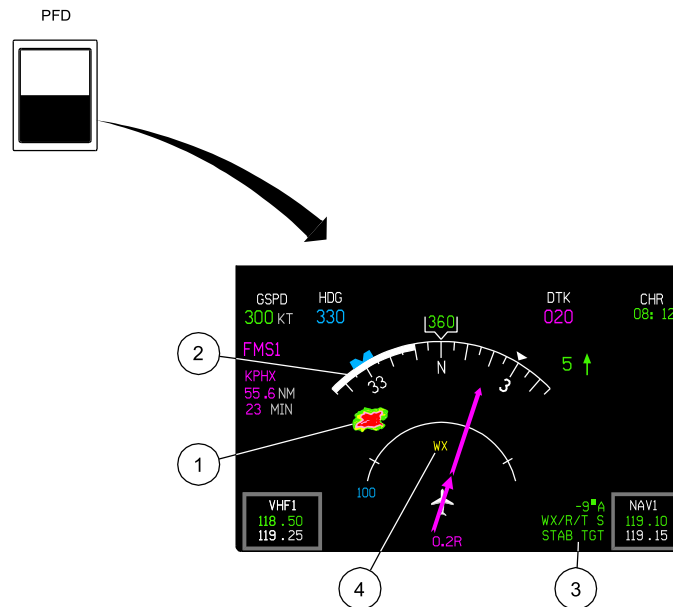


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- GMAP mode: color indicates surface information: black, cyan, yellow and magenta.
- TURB mode: areas of potentially hazardous turbulence (white).

2 - ANTENNA POSITION INDICATOR

- Indicates that antenna scan is active.

3 - WEATHER RADAR ANNUNCIATIONS

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REVISION 18

Controls and Indications

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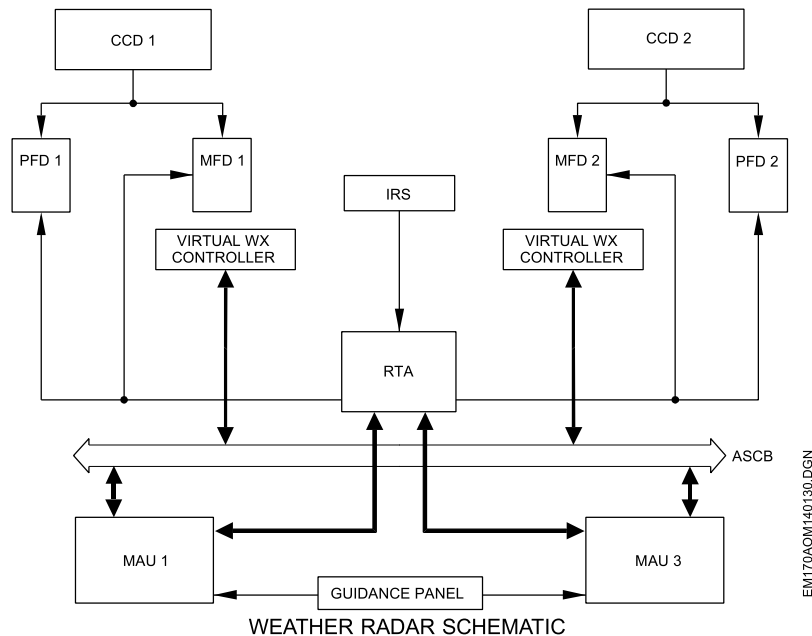
SYSTEMS DESCRIPTION
FLIGHT
INSTRUMENTS/COMM/NAV/FMS

AMBER (VAR): variable gain selected.

4 - WEATHER RADAR VIDEO ANNUNCIATION

- Indicates weather radar video failure.

mounted in the nose of the airplane, whereas the virtual controllers consist of the CCDs and the weather mode information displayed on the MFDs below the weather information.



Display of weather data is available on the MFDs and PFDs. Selection of weather data display is accomplished via CCD actuating in the MFD using a soft key to select MAP menu. This act will enable weather information and virtual controller on the MFD.

Five modes and ten functions are available. Each one will be discussed in the following sections.

WX RADAR MODES

RADAR WEATHER DETECTION MODE (WX)

The WX mode is used to detect areas of severe weather. This will allow the pilots to avoid areas of dangerous weather conditions and possible turbulence. If WX is selected before the initial RTA warm-up period is over (approximately 90s), WAIT is displayed in the mode field. In the wait mode, the transmitter and antenna scan are inhibited.

14-09-20

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TURBULENCE DETECTION (TURB) FUNCTION

The radar processes return signals in order to determine if a turbulence signature is present. Areas of moderate, severe, or extreme turbulence are displayed in soft white. TURB may only be engaged in the WX mode and at selected ranges of 50 NM or less.

- NOTE:** – It may occur that the Turbulence function annunciation in MFD and PFD to remain displayed for ranges above 50 NM even though the function is deactivated.
- Range selections of 200 NM or greater always clear Turbulence function annunciation.

ANTENNA STABILIZATION FUNCTION

The antenna is stabilized in pitch and roll using attitude information from the IRU. Momentarily selecting the STAB OFF checkbox disables antenna stabilization and causes an amber STAB to be displayed.

RECEIVER GAIN (GAIN) FUNCTION

The GAIN control varies the RTA receiver gain. There are two modes: variable and calibrated. The normal preset is calibrated mode and is used for weather avoidance. The system will be forced into calibrated gain when RCT or TGT are selected. The variable mode is useful for additional weather analysis and for ground mapping. In WX mode, variable gain can increase receiver sensitivity over the calibrated level to show weak targets or it can be reduced below the calibrated level to eliminate weak returns.

RANGE FUNCTION

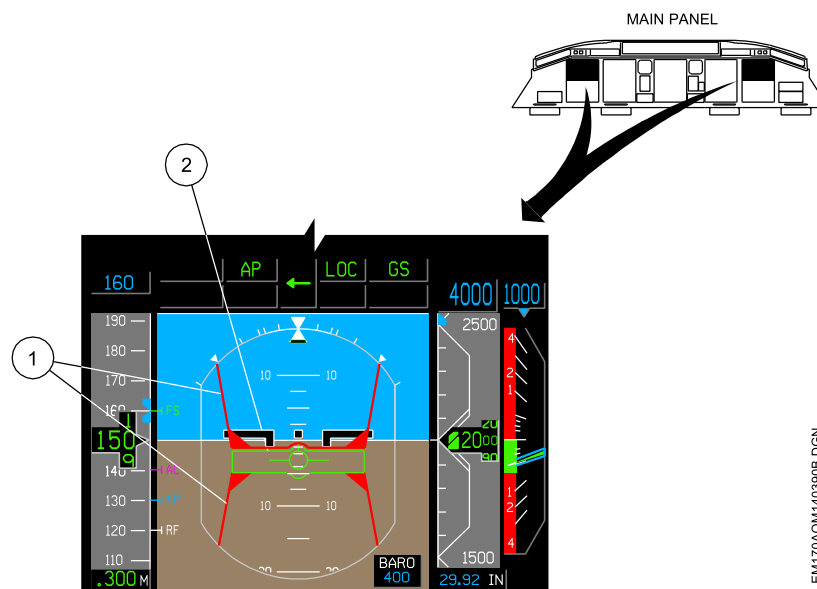
The range can be manually set (CCD) to a desirable value (10 NM, 25 NM, 50 NM, 100 NM, 200 NM, 300 NM). The label OVRG is shown whenever the Map range is greater than 300 NM.



9 - RANGE SELECTION

- Enable the selection of the range to be displayed. The selection is changed through the selector knob in the CCD.

TCAS INDICATION ON PFD



The commands provide pitch guidance information to the flight crew to recommend or prohibit a maneuver and prevent hazardous encounters with other airplane.

The vertical speed scale is used to display TCAS resolution advisories.

The red range is the avoidance zone and the green range is the fly-to-zone.

1 - AVOIDANCE ZONE

- Symbol: Trapezoid.
- Color: Red.



2 - FLY-TO ZONE

- Symbol: Rectangle.
- Color: Green.



1 - TCAS SELECTION IN MAP MENU

- Activates the TCAS information to be displayed on the map overlay format window.

2 - RESOLUTION ADVISORY (RA) INDICATION

- Symbol: Solid square.
- Color: Red.

3 - TRAFFIC ADVISORY (TA) INDICATION

- Symbol: Solid circle.
- Color: Amber.



4 - PROXIMATE TRAFFIC INDICATION

- Symbol: Solid diamond.
- Color: Cyan.

5 - OTHER TRAFFIC INDICATION

- Symbol: Hollow diamond.
- Color: Cyan.

6 - TCAS MODE

- Annunciates the TCAS operating mode.
- Labels and Colors:
 - TCAS FAIL: amber.
 - TCAS TEST: green.
 - TCAS OFF: amber.
 - TA ONLY: green.
 - TCAS TA/RA: green.

NOTE: The TA ONLY flashes amber when it is the active mode and a RA condition is detected.