

DCA25LA163

OPERATIONAL FACTORS/HUMAN PERFORMANCE

Attachment 8

Southwest Airlines Flight Operations Manual [Excerpts]

May 23, 2025

FOM 2.2.3 Risk and Resource Management

2.2.3 Risk and Resource Management

Revised: 03/27/2025

Risk is an expression of the probability and magnitude of an unwanted outcome. It occurs at many levels (e.g., loss of safety, not reaching business goals, loss of operational effectiveness). Risk is controlled by balancing the factors that increase risk with resources and strategies that decrease the potential for the undesirable outcome and/or increase the likelihood of a positive outcome.

Risk and Resource Management (RRM) is a framework to tie together in-depth and deliberate planning with action-oriented decision making. RRM provides Crew Members with a common language that is easy to use and understand.

Revision Number: 25-01
Revision Date: 03/27/2025

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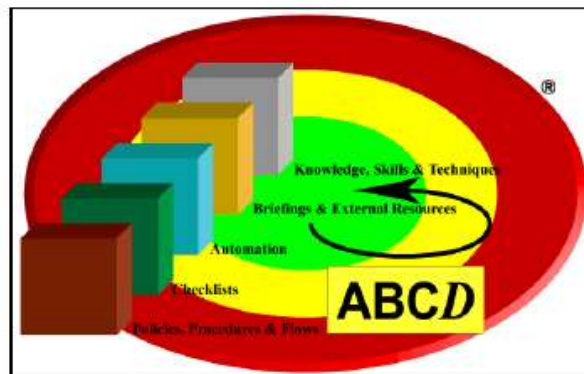
2.2.3 Risk and Resource Management

Revised: 06/23/2022

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Figure 2.4 RRM



Four Principles of RRM

The following four principals improve the odds of reaching goals:

- **Accept no unnecessary risk.** Different levels of risk are inherent when operating in a complex environment. No risk level that requires operating outside of the established policies and procedures should be accepted.
- **Anticipate and manage risk by planning.** Proactive management looks forward and develops strategies and resources that can be deployed during execution to minimize risk.
- **Accept risk when benefits outweigh the cost.** RRM balances risk with the potential gains to be made.
- **Make risk decisions at the right level.** Effective RRM requires good situational awareness.

Factors That Increase Risk and Decrease Performance

Risk factors are anything that increase risk and decrease performance. Risk factors are split into three categories:

- **Task Loading**—The perceived amount of time available to accomplish the required tasks. Crew Members should remain vigilant in recognition of task overloading; Crew Members should also avoid task under-loading, as long periods of low task loading can lead to inattention or complacency and increase risk.
- **Additive Conditions**—Any factor that adds to task loading or causes a distraction (e.g., the environment, equipment problems, operational problems, organizational influences). Unpredictable situations or lack of information are additive conditions that can increase risk. Crew Members should beware of focused attention and/or tunnel vision from themselves and others.
- **Crew Factors**—The physiological elements of Crew Members that negatively impact operational effectiveness and safety (e.g., fatigue, stress, fear, illness, experience). Additionally, group mindsets and attitudes, such as "press on regardless," can negatively impact the performance of an individual or Crew.

2.2.3.1 The RRM Model

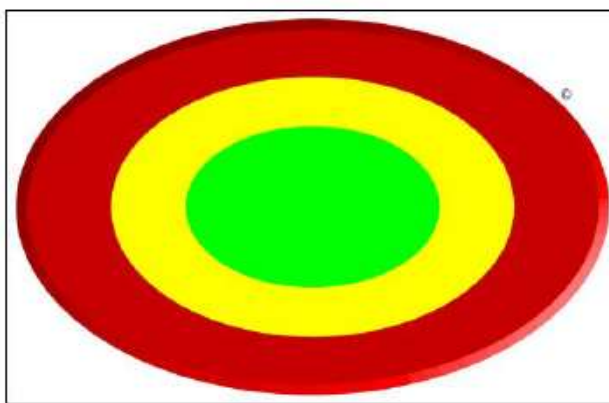
Revised: 06/23/2022

The Target

The target is an indicator of how much potential risk is being faced. The target is color coded into green, yellow, and red areas, where the rings further from the center represent increasing levels of risk. Crew Members should continually work towards operating in the green area. The colored areas are explained as follows:

- **Green**—Represents a high likelihood of a positive outcome. This is a combination of good situational awareness, management strategies, and resources in place to capture errors. Effective communication assists proactive management to anticipate problems, minimize errors, provide enhanced situational awareness, and balance operational priorities.
- **Yellow**—Represents increased risk due to higher task loading, additive conditions, and/or Crew factors. Operating in the yellow area is an indication that it may be time to re-prioritize; attention narrowing may increase the chance of errors going unnoticed. Situational awareness could be decreasing.
- **Red**—Represents a high potential for a serious error or operational failure. The time available and/or resources are not in place to capture errors. Operating in the red area means that there is a danger that situational awareness has severely diminished, and tunnel vision may occur. A recovery is necessary, and communication must become more directive.

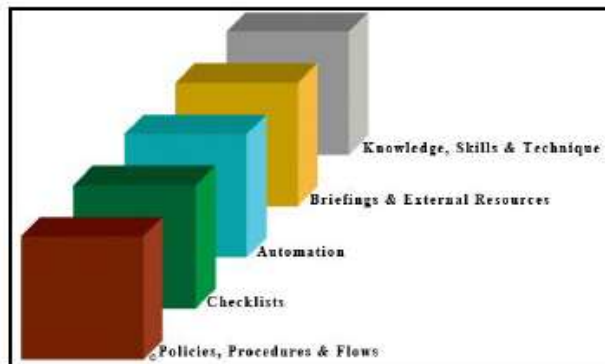
Figure 2.5 Target



Resource Blocks

The colored resource blocks represent resources that can be used to improve performance, reduce risk, and manage a time-constrained situation. Using multiple blocks can be more effective at stopping an error chain.

Figure 2.6 Resource Blocks



- **Policies, Procedures, and Flows**—Policies, procedures, and flows create predictability and consistency. Using these blocks is equivalent to making decisions ahead of time. In the absence of a policy, procedure, or flow, Crew Members must rely on Southwest Airlines operational priorities to determine the appropriate course of action.
 - Policies are broad specifications about how Southwest Airlines management expects tasks to be performed to minimize risk.
 - Procedures dictate the manner in which operational management intends to have various tasks performed. Pilots are expected to accurately follow the procedure methodology and sequence in an efficient manner and at the appropriate time.
 - Flows are sequences for the accomplishment of a series of related tasks. Pilots are expected to consistently accomplish flows in a logical and timely manner. Any deviation from the documented flow sequence must not introduce unnecessary risk.
- **Checklists**—Checklists serve as a structured means of ensuring all critical items have been properly accomplished for a specific phase of flight or operating condition. Checklists reduce the reliance on memory.
- **Automation**—Automation reduces task loading by distributing the workload and allowing Pilots to effectively manage and monitor the programmed or directed flight path. Automation must be set up in advance and used appropriately to reduce risk. Inappropriate use of automation can increase risk.
- **Briefings and External Resources**—
 - Briefings are verbal communications conducted between people who are working together on the same goals and in the same context. Effective briefings create a shared mental model and help to develop a plan. Briefings conducted in an organized, timely, and thoughtful manner can help reduce risk.
 - External resources are people/groups who understand and have the same goals, but are working within a different context (e.g., ATC, Maintenance, Dispatch, Flight Service, ARINC, STAT MD).
- **Knowledge, Skills, and Techniques**—
 - Knowledge is readily recalled information that may be required or beneficial in the conduct of the flight.
 - Skills are the physical capabilities of a Pilot to operate the aircraft within the parameters of the policies and procedures set forth by Southwest Airlines.
 - Techniques are individual methods or behaviors. Techniques must be compatible with established policies and procedures, and are only effective if they do not interfere with the expectations of the other Pilot.

The ABCDs

The ABCDs are the actions to be performed to improve operational effectiveness and reduce risk. This is a fast and continuous process that integrates the need for improvement with three fundamental leadership skills: situational awareness, decision-making, and communication.

Figure 2.7 ABCD



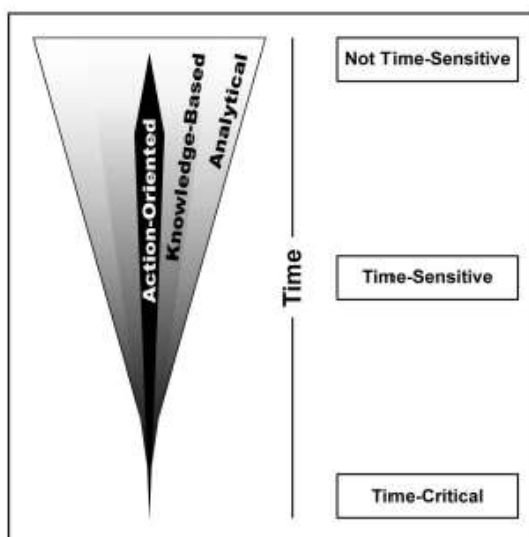
ABCD stands for assess (A), balance (B), communicate risk and intentions (C), and do and debrief (D). The ABCDs are defined as follows:

- **Assess**—Maintain situational awareness. Continuously evaluate what is happening now to identify, process, and comprehend the critical elements of information and determine how it affects the future outcome.
- **Balance**—Make decisions based on policies, procedures, and the operational priorities. This supports effective workload management and task redundancy.
- **Communicate Risk and Intentions**—Communicate effectively, timely, constructively, and appropriately, so that a shared mental model is established amongst Crew Members.
- **Do and Debrief**—Promote active involvement and constant self-evaluation. Crew Members should continuously work toward improving performance and reducing risk by developing and maintaining appropriate levels of communication, coordination, and situational awareness. This is achieved by debriefing and identifying factors in the environment that require the Crew to adapt to dynamically changing conditions.

Use of the ABCD process improves performance and minimizes risk in all operations and is paramount for the successful outcome of each task regardless of the time available and type of decision needed for a given situation. Crews should use the ABCD process continuously to improve decision-making effectiveness, even under duress. Individual Crew Members should also use the ABCD process to evaluate the effectiveness of other Crew Members. Deliberate planning prior to a flight and coordinated decision-making during the flight are effective ways to accomplish current goals and manage risk with the existing conditions and Crew Factors. Effective risk management and decision-making help Crews better adapt to changing conditions and operational requirements.

Decision-making requires a continuous ABCD process to determine the resources and strategies needed to accomplish each task. The ABCD process is dependent on the amount of available time between two or more events. Assessing what is occurring now and how it will affect a future outcome helps to accurately determine the time sensitivity of a task and avoid time misperceptions. The following three categories are used to define the decision-making types, based on time sensitivity:

Figure 2.8 Decision-Making Types and Time Sensitivity



Analytical

Analytical decisions are made in the interest of finding the best option available. This type of decision-making is used when task completion is not time-sensitive; often considers trend information for in-depth planning defined by long-term goals; and determines the need for the standardized resources to mitigate unacceptable risk. For example, briefings prior to a specific phase of flight help facilitate analytical decision-making. Current and future risks are assessed and mitigated through the development of a shared mental model and contingency planning that is in compliance with established policies and procedures.

Knowledge-Based

Knowledge-based decisions are made to correct the course of action before an adverse outcome occurs. This type of decision-making is used when task completion is time-sensitive, the information flow is in real-time, and the level of risk is increasing. The quality of a knowledge-based decision is often influenced by briefings, experience, resources, and effective collaboration and coordination with others, both inside and outside of the flight deck.

Action-Oriented

Action-oriented decisions are made when time is limited and rely on existing knowledge of the operating environment. This type of decision-making is necessary when the task is time-critical and is heavily influenced by Crew expectations, established plans, resources, intuition, coordination skills, and intellectual agility. Due to the potential for error, it is extremely important to use the ABCD process when relying on action-oriented decision-making.

FOM 3.4.2 -

3.4.2 Captain Briefing

Revised: 05/10/2024

The purpose of the Captain Briefing is to review and plan for all phases of flight by developing and establishing an appropriate shared mental model between both Pilots. The Captain should review the information pertinent to the flight and other resources for issues that might affect the flight. The Captain should discuss task loading, additive conditions, Crew factors, and the plan to use available resources to manage risk and increase performance.

When necessary, manage the risks of task loading by assigning specific PF and/or PM duties and responsibilities.

The Captain Briefing must be completed prior to beginning the Before Start—Originating/Before Start checklist.

(CA) Brief the following required items:

Rev #24-05
12/19/2024

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- **Assign PF/PM Duties**—Who will fly. Consider restrictions (e.g., HGS requirements, New Hire restrictions).

(CA) Brief the following, as relevant:

- **Station Information Page (SIP)**—Applicable operational considerations for departure and destination airports.
- **Alternates**—Departure and destination.
- **Special airports (e.g., CFIT avoidance, special procedures).**
- **MEL items**—Applicable operational considerations.
- **NOTAMs.**
- **Adverse weather**—Discuss appropriate course of action (e.g., avoidance, Precautionary Takeoff Profile).
- **Taxi routing/hotspots/Surface Movement Guidance and Control System (SMGCS)**—Brief the expected taxi routing, applicable hotspots, SMGCS, and any additional considerations depicted on the Jeppesen -6/-9 page (10-6/10-9 or equivalent).
- **Runway conditions (e.g., RCC, clutter/contamination).**
- **Rejected takeoff considerations**—Any conditions that adversely affect the aircraft during a rejected takeoff (e.g., adverse weather, runway conditions, MEL items).

FOM 3.4.3

3.4.3 Pilot Flying Briefing

Revised: 05/10/2024

The purpose of the Pilot Flying Briefing is to review and plan for the takeoff and departure, with specifics, unique to that leg. Both Pilots actively participate and review any new or previously briefed risk factors.

Brief required and any relevant items by referencing the resources available to the Flight Deck Crew (e.g., *Jeppesen* charts, SIPs, *MEL*, weather information).

To verify proper programming, the Pilot Flying briefs the SID waypoint sequence and restrictions from the FMC, and the Pilot Monitoring verifies against the appropriate chart.

The Pilot Flying Briefing must be completed prior to beginning the Before Start—Originating/Before Start checklist.

(PF) Brief the following required items:

- **Clearance**—Review the assigned ATC clearance and resolve any discrepancies.
- **MCP and VHF NAV radio**—
 - Verify MCP and NAV radios are set for the departure.
 - For runways with an engine failure procedure, ensure the appropriate VOR/ILS frequency and course are set (HGS-required takeoffs: N/A).
- **FMC route**—
 - Brief the planned runway, assigned departure, transition, and initial en route waypoint by referencing the resources available to the Flight Deck Crew (e.g., *Jeppesen* charts, SIPs).
 - To verify proper programming, the Pilot Flying reads the waypoint sequence and restrictions from the FMC, while the Pilot Monitoring crosschecks the appropriate chart.
 - When an ATC clearance does not contain an en route portion (e.g., SID to a STAR), brief the assigned arrival and transition from the FMC by reviewing each waypoint on the LEGS page before departure.
 - For non-charted departures, review the initial heading or course, applicable restrictions to altitudes and turns, NAV setup, and DME restrictions.
 - Manage discontinuities. Refer to *B737 AOM 4.9.2 Managing Discontinuities*.
- **Engine failure procedure**—
 - PWB engine failure procedures take precedence over the *Jeppesen -7* series pages.
 - For an engine failure after V_1 , discuss the planned airport or runway for the return. Refer to *B737 AOM 17.4 PWB Engine Failure Procedures* for more information.

(PF) Brief the following, as relevant:

- **Automation and navigation**—Whenever there are multiple options, brief planned engagement of LNAV, VNAV, or other navigation modes. If the plan is not clearly covered by *FOM* normal procedures, the Pilot Monitoring should be made aware of how the Pilot Flying intends to fly the aircraft.
- **HGS takeoff**—
 - Discuss whether HGS takeoff is required (i.e., RVR below 500).

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- Review HGS takeoff set-up requirements. Refer to *B737 AOM 9.2.6 HGS Takeoff and Departure* for procedures and specific information.
- **Required minimum climb gradient**—If applicable, brief the required minimum climb gradient for the planned and alternate runways and/or departure procedures. This information may be included in the SID and/or *Jeppesen -9A* page.
 - Note:** If a runway or departure other than the planned runway or departure is assigned and not previously briefed, reassess any required minimum climb gradient.
- **Transition altitude (if other than 18,000 ft).**

Note: The Captain may wish to amend or revise some of these briefing items before takeoff.

Note: Re-accomplish the Pilot Flying Briefing if an amended clearance is received, or if changes are made to FMC programming or takeoff performance prior to completion of the Before Push checklist.

8 Taxi Out

Revised: 07/21/2016

This chapter provides guidance applicable to initial taxi-out after leaving the gate. Much of this guidance applies anytime the aircraft is being taxed (e.g., taxiing to the gate after landing).

8.1 Taxi Operations General

Revised: 09/22/2022

An aircraft carrying Passengers must be taxed only by a qualified Flight Deck Crew. Anytime a qualified Flight Deck Crew taxes an aircraft under its own power, both Pilots are required to occupy their respective flight deck seats.

Note: It is not permissible to taxi with a combination of a Flight Deck Crew Member and an Aviation Maintenance Technician (AMT) occupying the flight deck seats.

Ensure that the *Jeppesen -9* page or equivalent (e.g., FDP Pro AMM) is in view.

Note: AMM itself may not include all operational information (e.g., ramp frequencies, standard taxi routes, taxiway weight limits) for all airports. Additional operational information may be found on the corresponding *Jeppesen 10-9(X)* pages.

Note: Momentarily switching to other supporting references on the EFB (e.g., SIPs) is permissible.

(FO) Call for taxi clearance from Ground Control.

Verify that the Captain's audio panel is set to monitor ground control.

(FO) Record complex taxi instructions.

If the clearance is to a runway different from the runway planned in the FMC, program the correct runway and reaccomplish the Pilot Flying Briefing.

Accomplish the Pilot Flying Briefing and crosscheck of the FMC with the aircraft stationary, either prior to taxi or coordinate to stop the aircraft prior to takeoff.

Accomplish the Departure Plan Checklist.

(CA) Verbalize the taxi clearance, including all "hold short" instructions.

Clearly communicate understanding the taxi clearance. Both Pilots must agree on the taxi route. Ask ATC for clarification if there is any doubt or confusion.

Direct attention outside during taxi, except for momentary flight deck crosschecks.

While the aircraft is moving, the intention is to have both Pilots focused outside.

Prior to moving the aircraft, visually clear respective sides of the aircraft and state, (CA) "Clear left" and (FO) "Clear right."

While completing the Before Taxi Checklist, Ground Personnel or ramp equipment may have moved into the aircraft footprint or taxi path. The intention of this directive is to clear these areas before moving the aircraft.

(CA) Taxi the aircraft smoothly with minimum power.

Release the parking brake. Smoothly increase the thrust to the minimum required for the aircraft to roll forward, then reduce the thrust.

Nose wheel and rudder pedal steering are used for maneuvering the aircraft. Rudder pedal steering may be used while taxiing where small directional changes are required. Make all turns at a slow taxi speed. During taxi operations, Pilots must maintain continuous awareness of proximity to obstacles and the potential dangers of the aircraft jet blast pattern. Taxi operation safety and Passenger comfort must be our primary considerations.

Make all turns with as large a radius as practical. Minimum radius turns result in heavy side loads and unnecessary scrubbing of tires. After completing a turn, and before stopping, return the nose wheel to the center position and roll forward enough to allow it to center, thereby relieving tire and structural stresses.

At idle thrust, the aircraft may accelerate to a higher taxi speed than desired. Do not ride the brakes to prevent high taxi speed. Allow the aircraft to accelerate, and then brake smoothly to a slow taxi speed, release the brakes smoothly, and repeat the sequence. Intermittent brake usage provides a cooling period between brake applications.

If nose wheel steering is inoperative, immediately stop the aircraft and set the parking brake.

- If an installed bypass pin is suspected as the cause, system A hydraulics must be depressurized (LOW PRESSURE lights illuminated) before the Ground Crew can approach the nose gear to remove the bypass pin.

- If nose wheel steering remains inoperative after confirmation of bypass pin removal, depressurize the system A hydraulics and request to be towed to the gate. Contact Dispatch and Maintenance Control, inform them of the fault, and make an aircraft logbook entry. Refer to *B737 AOM* 13.2 Towing to the Gate for more information.

WARNING: If the hydraulic system is pressurized when the bypass pin is removed and the nose gear is not centered, movement of the nose gear can cause injury to persons and damage to equipment.

(CA) Anytime the cabin becomes unsecured, stop the aircraft. Taxiing or aircraft movement on the ground with Passengers standing is prohibited.

Flight Attendants may perform their safety-related duties during taxi. Once these duties are complete, the Flight Attendants must be seated. If, at any time, the cabin becomes unsecured, the "A" Flight Attendant rings the flight deck twice and uses the interphone to inform that the cabin is not secure. Stop the aircraft until informed that the cabin is again secure.

(CA) Do not exceed operational taxi speeds.

Normal taxi speed is 20 kt or less ground speed. Do not exceed 30 kt ground speed on straight taxiways. Adjust to a slower taxi speed for adverse ramp and taxiway conditions.

(CA) Clearly announce the intention to deviate from the taxi line.

(CA) Avoid rough taxi maneuvering or abrupt power changes.

WARNING: The effects of all turns are exaggerated in the aft cabin. Heavy cornering may result in Flight Attendant injury, Passenger discomfort, or equipment damage.

Maintain adequate lateral clearance from other aircraft and stationary objects.

When the aircraft is not on a taxi line, a lateral clearance of 10 ft is considered minimum acceptable separation. Never allow any portion of the aircraft to overlap another aircraft or ground equipment. The only exception is stationary equipment in a properly marked area of the safety zone.

CAUTION: Lateral clearance, particularly to the top of the winglet, is difficult to judge. Aircraft geometry causes an outboard motion of the winglets (for non-winglet aircraft, the horizontal stabilizer) during turns.

If lateral clearance is in question:

- Stop the aircraft.
- Request a wing walker.
- Request a tug or wait for the other aircraft to move.

FOM 9.1.2

9.1.2 Intersection Takeoffs

Revised: 06/24/2021

Use RRM guidance and skills to determine if an intersection takeoff is compliant with Southwest Airlines' operational priorities.

- P** An intersection takeoff may only be performed if the Flight Deck Crew determines that performance data is available and used for that intersection takeoff.