Appendix 1

Group Chairman's Factual Report

Human Performance

DCA06MA009

Excerpts from Southwest Airlines Flight Operations Manual (FOM)

Guidance Prior to and Including
Revision 03-05, Dated November 09, 2005

Southwest Airlines Operational Philosophy

Mission Statement

The mission of Southwest Airlines is dedication to the highest quality of Customer service delivered with a sense of warmth, friendliness, individual pride, and Company spirit.

To our Employees: We are committed to provide our Employees a stable work environment with equal opportunity for learning and personal growth. Creativity and innovation are encouraged for improving the effectiveness of Southwest Airlines. Above all, Employees will be provided the same concern, respect, and caring attitude within the organization that they are expected to share externally with every Southwest Airlines Customer.

Flight Operations/Flight Dispatch Department Mission Statement

The mission of the Southwest Airlines Flight Operations Department is to conduct flight operations with the greatest safety, highest Customer satisfaction, and most reliable schedule at the lowest practical cost. These elements constitute the best possible product quality for our Customers.

Operational Priorities

Safety

The most important Flight Operations/Flight Dispatch decision-making priority is safety. No priority at Southwest Airlines takes precedence over the well being of our People, Customers, and equipment.

Service

Southwest Airlines is committed to providing positive Customer service under every situation. The Flightcrew responsibility is to make the air travel experience pleasant and dependable. The importance of "word of mouth" advertising and repeat business cannot be overstated. Our Customers are the reason we are employed. The Service Commitment begins with professional performance and extends to the application of personal initiative for the pleasure of our Customers. Pilots and Dispatchers are expected to meet the essential needs of the Customer through demonstrated concern and communication. This includes keeping Customers informed of known delays, cancellations, and diversions. It also includes meeting their needs during long aircraft delays and treating each Customer with respect, warmth, and friendliness.

Efficiently On Time

Flight Operations Operational Efficiency is achieved by Dispatchers and Flightcrews adhering to prescribed flight profiles and procedures.

Cost efficient flight operations through carefully created policy and procedure is an integral factor of Southwest Airlines' prosperity. This produces a competitive advantage that allows continued expansion and the stability of our work environment.

On-time performance is achieved through the personal accountability of each Employee directly involved with the operation of Southwest Airlines' aircraft. In addition, on-time performance comes from the integration of that individual effort and cooperation between the operating arms of the Company. Pilot and Dispatcher responsibility to this team effort is the application of our policies and procedures, which create an efficient operation.

Applying this priority with individual Pilot and Dispatcher experience through wise judgment will produce the most cost-effective outcome in any situation.

Dispatch Responsibilities

Southwest Airlines Dispatchers strive to maintain the highest standards of professionalism during the performance of their duties, while contributing to the accomplishment of departmental and Company mission. Dispatchers act as tactical representatives of senior management. They authorize, delay, or cancel flights, originate and disseminate, concise respectful inquiries, and instruction to all departments. Dispatchers, in accordance with government regulations and Company policies, share joint responsibility with the Captain for the safe operation of all flights. Dispatchers are responsible for analyzing and evaluating meteorological information, computing fuel requirements, selection of routes, preparing flight plans, and issuing Dispatch Releases. To evaluate the progress of each flight, Dispatchers monitor weather conditions, aircraft position, all available aeronautical information, and update the Captain of any significant changes.

Pilot Responsibilities

Southwest Airlines Pilots are expected to contribute to the accomplishment of the department and Company missions through disciplined and professional application of flying skills; however, performance expectations go far beyond technical competence. Southwest Airlines Pilots are expected to think and lead. As the "on-scene" Leader, Pilots often set the tone and have a significant influence on Employee attitude, performance, and commitment to excellence. Therefore, Pilots are expected to exercise Leadership by example and execute reasoned decisions on every flight, every day. Their innovation and forethought should consistently result in the finest quality product produced at the lowest practical cost.

Southwest Airlines procedures and guidelines are designed to maximize safety, efficiency, and performance predictability with the expectation that they will be followed unless unusual circumstances make a different course of action more likely to achieve the desired product quality. Consideration of operational priorities must be an integral part of every operational decision. Operational priorities are not flexible or subject to alteration. Pilots who fail to keep these priorities in alignment have failed in their Leadership role.

Integration of operational priorities with procedural standardization is the key to safe and efficient high frequency operations. Operational standardization creates predictable performance that allows Pilots to quickly recognize deviation from normal performance and apply appropriate corrective action. Nothing in this philosophy discussion should be interpreted as encouragement to routinely deviate from procedural standardization or practice "selective compliance" with procedures. Pilots are expected to follow standard procedures. Pilots are also expected to make the maximum contribution to product quality by application of operational priorities to on-scene decisions. Therefore, adjustments to procedural norms which do not distort operational priorities will sometimes be appropriate. Pilots should expect that when their Leadership decisions can be demonstrated to be clearly based on application of operational priorities, they will be supported by the Company. Pilots who deviate from procedural norms should, however, expect their actions to be questioned and critiqued. They must also be prepared to accept personal responsibility for outcomes which are the consequence of their decisions.

Examples of this philosophy application in the "real world" follow:

- The conscientious Pilot is expected to have at least a "two-flight vision" of operations. The aircraft should be operated with a view toward the impact of current decisions not only on arrival at the next destination, but also on subsequent departures and arrivals.
- The conscientious Pilot will evaluate the departure/arrival airport layout and request runways which meet safe performance margins and provide the most expeditious routing even though that may not be the primary operational runway on a particular day.
- The conscientious Pilot will normally fly the filed route and altitudes. However, traffic density, routing distance advantages, and weather will occasionally dictate that the Pilot consider alternate altitudes and routes to achieve our operational priorities while providing the highest quality product possible.

In summary, the finest quality product is dependent on thinking Pilots who consistently apply standard procedures to operational priorities. Occasional deviation from standard procedures is acceptable if the decision is made to more effectively assure compliance with operational priorities. Pilots are expected to lead by example and consistently apply their technical expertise to achieve the high quality product that Southwest Airlines Customers expect on every flight.

Professionalism vs. Foolish Pride

The thoughts described here have been a part of the Southwest Airlines culture and tradition since the beginning. They clearly articulate one of the most important requisites to the continued success of our airline.

Those Pilots who pioneered this flying business built a reputation for the "brotherhood of men and women who fly" that has caused many wide-eyed youth to envision his future in the sky. They are historically represented in tales of bold and courageous deeds, daring and frequently hazardous stunts, and adventures often beyond the scope of the most imaginative romanticist. Pass that reputation through the decades of aviation's progress and those words such as adventurous, daring and hazardous, bold and courageous, become the substance that experience, circumspection, and foresight are made of; essential qualities for the airman of today. Any aviator who readily submits himself to the dictates of the opposing laws of aerodynamics and gravity must also, of necessity, possess the personal qualities of self confidence and humility in equal measure. Furthermore, any aviator accepting the daily responsibility for the safety of scores of lives, many dollars of investment, and the image of his corporation and profession, will require the encompassing quality of integrity. All these qualities are desirable for success in any occupation. In the business of flying, however, so much is continually staked on experience, circumspection, foresight, self confidence, humility, and integrity that they become essential prerequisites for the profession.

Unfortunately, there is an overwhelming enemy of these qualities which, in its pernicious way, works by negating humility, distorting self confidence, and causing complete disregard for the dictates of experience, circumspection, and foresight. We refer to a thing called pride. Not the personal pride that is born of dignity and self respect—this is incorporated in the quality of integrity—but the pride that is most frequently preceded by the adjective "foolish"; the kind of pride that automatically rejects the advice of others if it contradicts personal thoughts; the kind of nearsighted pride that fosters false confidence, oversteps the bounds of discretion, and delivers unto the hands of fate.

Consider, for example, the Pilot who attempts to push his flight to a conclusion through marginal weather at the destination airport simply because previous flights have made it through. Not to be outdone, he falls victim to his foolish pride. Yet, if he moves one fraction of an inch beyond the limits of his experience, makes one small compromise with safety, shaves one short length from his full measure of foresight, or sacrifices one grain of humility to an inflated self confidence, he runs the risk of becoming a statistic in a column of liabilities.

The truly professional airman, however, feels no need to impress anyone with the skill he possesses, nor does he consider it embarrassing to decide against performing an action that has been successfully completed by others, if, in his personal judgment, there is an element of compromise involved. His decisions to

continue or divert will be based upon a factual analysis of the weather situation and a careful evaluation of his capability. Such is the evaluation he will use in any close situation. He knows the influence of foolish pride is totally undesirable, unsafe, and downright dangerous in his profession. There is no room for it. It cannot be tolerated.

Standardization and Coordination

Standardization and coordination are essential keys to safe and efficient operation of Southwest Airlines aircraft. Captains are expected to demonstrate disciplined use of standard procedures and ensure First Officers understand and use standard procedures. Captains are responsible for decisions affecting the conduct of their flight; however, they should use all available resources to assist them in making operational decisions. The Boeing 737 was not designed as a single Pilot aircraft and should not be flown as if it were. Southwest Airlines First Officers have all previously been Pilots-in-Command and therefore should be treated as experienced Pilots who are in training to be Captains at Southwest Airlines. First Officers are expected to remain vigilant and alert to ensure that the Captain has not overlooked anything of importance. Both cockpit crewmembers should consistently support each other in every phase of flight. Successful coordination depends on the sum of two intangibles: judgment and the ability of the Flightcrew to adjust to the many varied personalities with whom they are required to fly. The duties, or specific acts required for each crewmember, may be definable. However, without smoothly functioning team precision, these varied duties can become elements of a confused situation, which can lead to adverse consequences.

In a two-Pilot cockpit, change of aircraft control must be absolutely positive. There can be no doubt about who is flying the aircraft. Therefore, when aircraft control is transferred between the Captain and First Officer it must always be done with a statement that is acknowledged by the other Pilot, e.g., **You have the aircraft. I have the aircraft.**

Introduction

This chapter contains Airplane Flight Manual and manufacturers' operating limitations that are essential to the safe operation of the aircraft. Airplane Flight Manual items are designated by the letters **AFM**. Specific limitations which must be committed to memory by the Flightcrew are denoted by the symbol ✔. Other limitations within the chapter need not be memorized; however, the Pilot and Dispatcher are expected to have a working knowledge of these limitations and to be able to apply them as required.

"Working knowledge" is defined as knowing:

- When a procedure, technique, or limitation is appropriate;
- Where to find the information which is pertinent; and
- How to apply a procedure, technique, or limitation to achieve a desired outcome.

Limitations (L)

Limitations are parameters imposed by the Airplane Flight Manual **(AFM)** or other regulations which constitute the boundary of system or flight operations. Compliance with published limitations is essential to safe operation of the aircraft.

Policies (P)

Policies are a plan of action or way of management based on practical wisdom or prudence. Crews and Dispatchers are expected to follow policy guidance.

Recommendations (R)

Recommendations, although not regulatory limits, are guidance information for meeting prudent performance criteria and should be carefully considered by the Captain and Dispatcher.

Instrument Markings

Maximum limits are marked by a red radial line. The caution range is marked by a yellow arc. The normal operating range is marked by a green or white arc. Minimum limits are marked by a red radial line or arc.

Operations Specification (OpSpec)

This is a "contract" between the FAA and Company as to how the operation will be conducted. Requirements in the OpSpec are mandatory, and must be brought to the attention of all crewmembers and Dispatchers.

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Operational Considerations

- **P** The “Read Before Fly” book must be read when originating a pairing at a domicile.
- **P** Dispatchers will read the “Read Before Dispatch” information at the beginning of their shift.
- **P** Printed material other than that which is pertinent to flight operations will not be read on the flightdeck and will be kept out of public view at all times. Pilots will ensure their primary attention is not diverted from Crew duties during conduct of the flight.
- **P** Only material and publications supplied by Southwest Airlines will be used for critical phases of the operation.
- **P** Paperwork will not be accomplished during taxi, takeoff, approach, landing, or below 10,000 feet MSL except cruise flight below 10,000 feet MSL. Necessary Loading Schedule calculations are allowed during taxi.
- **P** Takeoff performance data for the anticipated runway will be completed, verified, reviewed, and the OPC stowed prior to pushback.
- **P** Pilots will exercise minimum usage of FMC/CDU during ground maneuvering and in-flight below 10,000 feet.
- **P** Except when the *MEL* specifically states otherwise, under no circumstances will any warning light, caution light, or system position light be removed, blocked, or covered.
- **P** Pilots will use Engine Bleeds On procedures when operational conditions permit.
- **P** Dispatchers will plan Engine Bleeds On procedures when operational conditions permit.
- **P** The wing anti-ice switch will be turned OFF prior to beginning the takeoff roll.
- **P** Only the Captain will reject the takeoff.
- **P** Extend and retract flaps whenever possible as indicated on the MASI (**-300/-500**: on the recommended speed schedules).
- **R** It is recommended that RETRACTABLE (**-300/-500**: outboard) landing lights be retracted when flaps are up.
- **P** The landing lights will be illuminated anytime below 18,000 feet MSL, day or night; however, light use is at the Captain’s discretion during reduced visibility conditions.
- **R** (**-300/-500**) If installed, the alternating landing light system (ALLS) is recommended for use.
- **P** (**-300/-500**) Do not use the alternating landing light system (ALLS) in any condition that distracts Pilots.

P (**-300/-500**) During night operations, the ALLS should not be used within 200 feet AGL.

R Position lights should be illuminated for all operations.

P Tour flights are prohibited.

P Pilots will not intentionally conduct flight operations nor will flights be dispatched in areas of known or probable severe turbulence. A combination of forecasts, PIREPs, aircraft types, times, locations, and altitudes must be considered in determining known or probable severe turbulence.

P Aircraft will not be dispatched or flown into known or probable severe icing conditions. A combination of forecasts, PIREPs, aircraft types, times, locations, and altitudes must be considered in determining known or probable severe icing conditions.

P No Pilot-in-Command may allow a flight to continue toward any airport to which it has been dispatched or released if, in the opinion of the Pilot-in-Command or Dispatcher, the flight cannot be completed safely, unless, in the opinion of the Pilot-in-Command, there is no safer procedure. In that event, continuation toward that airport is an emergency situation.

P Pilots employed by Southwest Airlines will not perform Maintenance of any kind on Southwest Airlines' aircraft. This includes Pilots employed by Southwest Airlines that have an A & P certificate.

P Pilots may enter the E & E compartment of the aircraft to inspect or trouble shoot but they may not reset, cycle, or rerack any aircraft component, radio, or circuit breaker within the E & E compartment.

P When encountering a Maintenance problem during nighttime hours, passengers should be removed before powering down the aircraft.

✔ **P** A tripped circuit breaker may only be reset once. Allow approximately two minutes for cooling before resetting. An in-flight reset should only be accomplished if, in the judgement of the Captain, regaining use of that system is critical to the safe conduct of the flight.

P A Flightcrew reset of a tripped circuit breaker or cycling of a circuit breaker for any reason other than directed by FOM/QRH procedures requires an Info Entry in the Logbook (see “Logbook: Discrepancy: Info Entry” in the appendix).

✔ **L** Flightcrews will not reset tripped fuel quantity indicator, fuel pump, or fuel pump control circuit breakers.

AFM L CG Limits: Use approved weight and balance system.

AFM L During taxi/takeoff/landing on revenue flights, all escape slide retention bars must be armed.

AFM L Installation of handle covers on the overwing exits must be verified prior to departure whenever passengers are carried (**-300/-500**: N/A).

L Except in an emergency, disarm escape slide bars prior to opening any door.

L An approved *Minimum Equipment List* (*MEL*) will be used (OpSpec).

L Prior to arriving at or departing any airport designated as a "Special Airport," Pilots will review the *Jeppesen* supplied pictorial representation of that airport.

L Except when the *QRH* or *MEL* specifically states otherwise, under no circumstances will a warning horn or bell circuit breaker be pulled to silence an aural warning.

AFM L **(-700)** Certified only for flaps 1, 5, 10, 15, and 25 takeoffs.

AFM L **(-300)** Certified only for flaps 1, 5, and 15 takeoffs.

AFM L **(-500)** Takeoff is not authorized at flap position 1 or 2.

AFM L **(-500)** Certified only for flaps 5 and 15 takeoffs.

L Minimum altitude for flight director plus LNAV engagement after takeoff or missed approach is 400 feet AGL.

L Minimum altitude for autopilot plus LNAV engagement after takeoff or missed approach is 1000 feet AGL.

L The VNAV function will not be engaged. However, VNAV information presented on displays may be used as advisory information.

✔ **L** Flightcrews must immediately respond to TCAS information (both TAs and RAs) by using the TCAS (Traffic Avoidance) guidelines located in "Non-normal Operations: Maneuvers and Profiles."

✔ **AFM L** Pilots are authorized to deviate from an ATC clearance to the extent necessary to comply with the TCAS II Resolution Advisory (RA).

P Turbulent Air Penetration Speeds at or below 15,000 MSL: 230-250 KIAS

L Turbulent Air Penetration Speeds above 15,000 MSL:

(-700) 280 KIAS/0.76 Mach
(-300) 280 KIAS/0.73 Mach
(-500) 280 KIAS/0.73 Mach

L Pilots are not authorized to conduct contact approaches (OpSpec).

L Pilots are not authorized to conduct Precision Approach Radar (PAR) approaches, except in an emergency (OpSpec).

P Aircraft will not land if exceeding the landing performance limits computed by the Onboard Performance Computer (OPC) or, in the absence of the OPC, other Southwest Airlines/FAA approved landing performance data.

L The use of a pack is not authorized when a preconditioned air source is being used to heat or cool the aircraft.

P Aircraft fuel tanks must be dripsticked to verify fuel quantity after a ground transfer of fuel.

P Auto brakes, if operational, will be used when the Min(2) stopping margin is less than 500 feet and the reported or anticipated runway condition is not DRY. Auto brake use in all other situations is at the Pilot's discretion. When auto brakes are used, comply with the following:

- Use the lowest auto brake setting resulting in a stopping margin of 500 feet or more.
- If a stopping margin of at least 500 feet cannot be achieved with any auto brake setting, landing is still authorized using MAX, provided a positive stopping margin is computed.
- Use of auto brake level 1 is not authorized.

Takeoff and Landing Considerations

Takeoff Is Not Authorized under the Following Conditions

L Weather conditions are below FAA established minima.

L Wind limitations are exceeded.

L Observations from the cockpit indicate that takeoff cannot be made by following approved procedures.

L During night operations, when the Captain cannot ensure that sufficient runway lighting exists to allow the takeoff to be completed safely. ❶

L Greater than 1/2 inch water or slush on the runway. ❷

L Greater than 1 inch of wet snow on the runway. ❷

L Greater than 4 inches of dry snow on the runway. ❷

L Braking action reported as "NIL." ❸

L Greater than light freezing rain at the airport. ❹

L Known or probable severe icing conditions. ❺ ❼ ❽

L Known or probable severe turbulence. ❺

L Frost, snow, or ice is adhering to the leading edge devices, any control surface, tab surface, upper wing surface, or balance cavity. However, frost up to 1/8 inch thick on the lower wing surfaces due to cold fuel is permissible. ❻

L Either thrust reverser is inoperative and the runway is contaminated with clutter or the braking action is less than "GOOD."

Takeoff Is Not Recommended under the Following Conditions

R The plowed or usable runway width is less than 100 feet.

Notes:

❶ In all cases, FAA approved temporary lighting may be substituted for portions of normal lights, provided corresponding minima reductions are applied.

❷ See "Definitions" in this section.

❸ Takeoffs will not be attempted if braking action on the taxiways, ramps, or any portion of the runway is reported "NIL" by air carrier jet aircraft. Friction measuring device values (Tapley or Mu-meter) should be used in conjunction with air carrier jet braking action reports. Braking action and friction measuring information are described in "Normal Operations: Landing."

Note: It is acceptable to taxi/tow at airports with taxiways and/or ramps reported as "NIL" so long as the taxiway(s) and/or ramp(s) or portions thereof to be used are reported better than "NIL."

❹ The precipitation intensity stated in weather reports (ASOS, ATIS, weather briefer, etc.) or when received from an ATC controller is "moderate" unless it is modified by "light (-)" or "heavy (+)." Exceptions to this are ice crystals and hail, which do not receive intensifiers.

❺ A combination of forecasts, PIREPs, aircraft types, times, locations, and altitudes must be considered.

❻ Thin hoarfrost is acceptable on the upper surface of the fuselage provided all vents and ports are clear. Thin hoarfrost is a uniform white deposit of fine crystalline texture, which usually occurs on exposed surfaces on a cold and cloudless night, and which is thin enough to distinguish surface features underneath, such as paint lines, markings, or lettering.

❼ No aircraft will be dispatched, enroute operations continued, or a landing attempted when in the opinion of the Captain and/or Dispatcher icing conditions exist or are anticipated which might adversely affect the safety of the flight.

❽ Flights may be dispatched into light to moderate icing conditions only if all anti-icing equipment for the aircraft is in operable condition.

New Hire Pilot Takeoff and Landing Restrictions

During a First Officer's first 100 hours, unless flying with a Check Pilot, FARs require that the Captain takeoff and land in the following:

- At airports that are designated as "Special Airports" by the FAA which are highlighted by the OPC.
- Prevailing visibility is at or below 3/4 mile.
- RVR is at or below 4000 feet.
- Runway has water, snow, slush, or similar conditions that may adversely affect aircraft performance.
- Braking action is reported to be less than "GOOD."
- Crosswind is greater than 15 knots.
- Windshear is reported in the vicinity of the airport.
- Any other condition that makes it necessary for the Captain to conduct the takeoff or landing.

The Captain Will Land under the Following Conditions

- **L** An engine is shutdown.
- **P** Visibility is below 3/4 mile or 4000 RVR.
- **L** Required by new hire Pilot landing restrictions.

Landing Is Not Authorized under the Following Conditions

- **L** Weather conditions are below FAA established minima.
- **L** Wind limitations are exceeded.
- **L** During night operations, when all runway lights (edge, centerline, etc.) are inoperative. However, landing is permitted with partial runway lighting if the Captain determines there is adequate lighting to permit a safe landing. ❶
- **L** Water or slush >1 inch on runway. ❷
- **L** Wet snow >2 inches on runway. ❷
- **L** Dry snow >6 inches on runway. ❷
- **L** Braking action reported as "NIL." ❸
- **L** Greater than light freezing rain at the airport. ❹
- **L** Known or probable severe icing conditions. ❺ ❻ ❼
- **L** Known or probable severe turbulence. ❺
- **L** Either thrust reverser is inoperative and the runway is contaminated with clutter or the braking action is less than "GOOD."
- **P** LAHSO

Landing Is Not Recommended under the Following Conditions

- **R** The plowed or usable runway width is less than 100 feet.

Notes:

❶ In all cases, FAA approved temporary lighting may be substituted for portions of normal lights, provided corresponding minima reductions are applied.

❷ See "Definitions" in this section.

❸ Landings will not be attempted if braking action on the taxiways, ramps, or any portion of the runway is reported "NIL" by air carrier jet aircraft. Friction measuring device values (Tapley or Mu-meter) should be used in conjunction with air carrier jet braking action reports. Braking action and friction measuring information are described in "Normal Operations: Landing."

Note: It is acceptable to taxi/tow at airports with taxiways and/or ramps reported as "NIL" so long as the taxiway(s) and/or ramp(s) or portions thereof to be used are reported better than "NIL."

❹ The precipitation intensity stated in weather reports (ASOS, ATIS, weather briefer, etc.) or when received from an ATC controller is “moderate” unless it is modified by “light (-)” or “heavy (+).” Exceptions to this are ice crystals and hail, which do not receive intensifiers.

❺ A combination of forecasts, PIREPs, aircraft types, times, locations, and altitudes must be considered.

❻ No aircraft will be dispatched, enroute operations continued, or a landing attempted when in the opinion of the Captain and/or Dispatcher icing conditions exist or are anticipated which might adversely affect the safety of the flight.

❼ Flights may be dispatched into light to moderate icing conditions only if all deicing equipment for the aircraft is in operable condition.

Takeoff Clutter Considerations

Caution: Flaps 5 configuration is recommended for takeoff when conditions are conducive to ice accumulation on the wing and tail surfaces, especially the upper surfaces. In icing conditions, a higher angle of attack may contribute to unwanted pitch-up and/or roll-off during rotation and lift off. Flap position 5 provides a better margin of performance to prevent this condition.

Definitions

- Slush is snow mixed with water.
- Snow is considered wet if it can be compacted easily by hand.
- Snow is considered dry if it cannot be compacted easily by hand.
- A runway is considered wet when it has a shiny appearance due to a thin layer of water less than 1/8 (0.125) inch.
- "Thin Clutter" is an OPC term that means more than 25 percent of the runway surface is covered with the following:
  - 0.125 to 0.25 inch standing water or slush
  - 0.125 inch up to and including 0.50 inch wet snow
  - 0.75 inch up to and including 2.0 inches dry (loose) snow
- "0.50 in Clutter" is an OPC term that means more than 25 percent of the runway surface is covered with the following:
  - Greater than 0.25 inch up to and including 0.50 inch standing water or slush
  - Greater than 0.50 inch up to and including 1 inch wet snow
  - Greater than 2.0 inches up to and including 4 inches dry (loose) snow
- Freezing is a description that is added to further amplify types of weather such as precipitation or obscurations and is defined as the following:
  - When freezing fog is occurring and the temperature is below 0° C
  - When drizzle and/or rain freezes upon impact and forms a glaze on the ground or other exposed objects
- Moderate rain is defined as rain in which individual drops are not clearly identifiable; spray is observable just above pavements and other hard surfaces.
- Heavy rain is defined as rain that seemingly falls in sheets; individual drops are not identifiable; heavy spray to a height of several inches is observed over hard surfaces.
- Moderate freezing rain and heavy freezing rain can be defined by combining the appropriate rain definition with the freezing definition.

Wind Considerations

R Maximum recommended wind velocity for takeoff and landing is 50 knots steady and 70 knots peak gusts.

Gust velocities and directions are advisory; however, operations with steady wind components at or near 35 knots accompanied by higher gusts require careful evaluation of runway surface conditions and width to ensure the safety of the operation.

Use steady state wind velocity for crosswind computations.

Use peak gust wind velocity for tailwind computations.

Wind conditions reported as “light and variable” may be entered into the OPC as calm.

Wind direction input into Swift or the OPC must have a magnetic north reference. Therefore, if wind direction is provided by a Terminal Forecast (TAF), a Routine weather report (METAR), or a non-routine weather report (SPECI), it must first be converted from true north reference to magnetic north reference by correcting for local magnetic variation.

Takeoff and Landing Wind Components

Wind Components Limitations AFM (L)				
Conditions	Steady X-Wind		Peak Gust Tailwind	
	Takeoff	Landing	Takeoff	Landing
Dry	35	35	10	10
Wet	35	35	10	10
✔ <4000 RVR or 3/4	35	10	10	10
✔ <1600 RVR or 1/4	20	10	10	10
✔ <600 RVR	10	—	10	—
✔ Clutter ❶	20	20	10	10
✔ Braking Fair	15	15	10	10
✔ Braking Poor	10	10	5	5

L 25 knot maximum headwind for HGS:

- takeoffs below 600 RVR
- approaches below 1800 RVR or Special CAT I approaches below 2400 RVR

Note:

R ❶ Clutter reductions and recommendations apply only when clutter covers more than 25 percent of the runway surface.

Wet Runway

Dispatch will plan flights on the basis of "wet" runways when appropriate weather forecasts call for:

- **P** Showers or occasional showers
- **P** Drizzle
- **P** Continuous light rain
- **P** Freezing rain (of any intensity)
- **P** Snow
- **L** The visibility to be below 3/4 mile or 4000 RVR (OpSpec, applies only to landings).

Systems Limitations

Systems are listed alphabetically in this section.

Aircraft Operational Envelope

AFM L Operating Altitudes and Temperatures

	-700	-300/-500
✔ Max Operating Pressure Alt	41,000 feet	37,000 feet
Max TO/LDG Pressure Alt Limits	8,400 feet	8,300 feet
TO/LDG Operating Temperature Limits	-52°C to +54°C	-52°C to +54°C

AFM L Runway slope limits ±2 percent.

L Maximum tire speed 195 knots.

AFM L Observe V_{MO} arc (**-300/-500**: V_{MO} pointer), landing gear, and flap placard limit speeds.

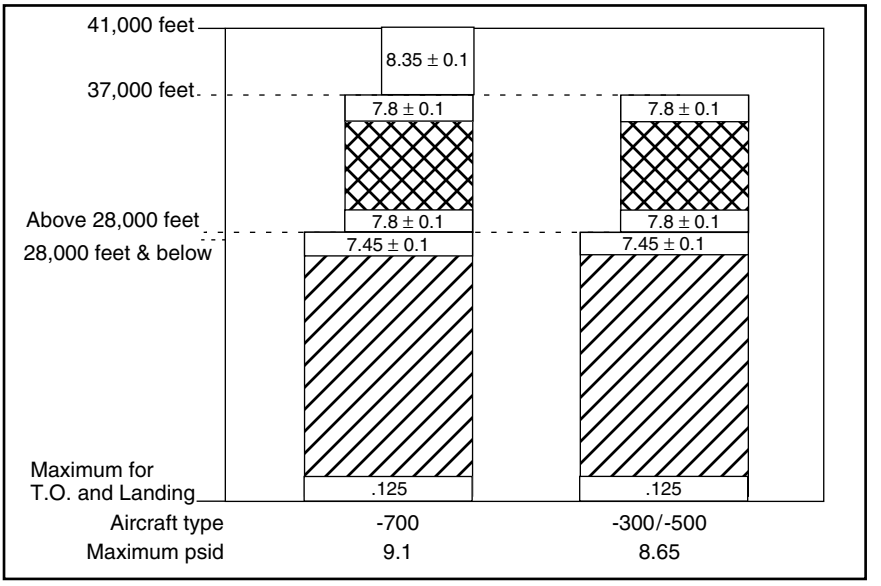
AFM L Mach Trim inoperative maximum speed: 0.82 Mach (**-300/-500**: 0.74 Mach).

AFM L Flight Maneuvering Load Limits:

Flaps up	+2.5g to -1.0g
Flaps down	+2.0g to 0.0g

Air Conditioning and Pressurization

Pressurization



Caution:

✔ **AFM L** With engine bleed air switches ON, do not operate the air conditioning packs in HIGH for takeoff, approach, or landing.

Auxiliary Power Unit (APU)

AFM L APU bleed valve must be closed when
- ground air is connected and isolation valve is OPEN.
- number 1 engine bleed valve is OPEN.
- isolation valve and number 2 engine bleed valves are OPEN.

L APU bleed valve may be OPEN during engine start provided engine power is not above idle.

L Wait 90 seconds prior to second APU start attempt and allow a 5 minute cooling period before a third. Do not attempt a fourth start. If the APU fails to start after the third attempt, call Dispatch/Maintenance.

L Wait at least 20 seconds after APU shutdown prior to positioning the battery switch to OFF.

R The APU should be operated for one minute before being used as a bleed air source.

R (**-300/-500**) The APU bleed air switch should be OFF for at least two minutes before the APU is shut down.

APU Limitations AFM (L)		
	-700	**-300/-500**
Max EGT (Momentary)	N/A	760°C
APU EGT (Continuous)	N/A	710°C
✔ Max Altitude for Operation	41,000 feet	35,000 feet
✔ Max Altitude Electric Only	41,000 feet	35,000 feet
✔ Max Altitude Bleed Air Only	17,000 feet	
✔ Max Altitude Bleed Air & Electric	10,000 feet	

Autopilot

AFM **L** Use of the autopilot is not authorized for takeoff or landing.

L Minimum altitude for autopilot engagement after takeoff—1000 feet AGL.

L Minimum altitude for autopilot disengagement during approach—50 feet below DH / MDA, but no less than 50 feet AGL.

AFM **L** (**-300/-500**) Do not use alt HOLD mode when the Captain's alternate static source is selected.

AFM **L** Use of aileron trim with the autopilot engaged is prohibited.

Cargo Bay Smoke Detection and Fire Suppression

✔ **L** Aircraft must land within 60 minutes of initial discharge of the fire suppression system.

L (**-300/-500**) No cargo or baggage may be carried in either the forward or aft cargo compartments if the sys ok light on the CDU is not illuminated.

L (**-300/-500**) No cargo or baggage may be carried in the forward cargo compartment if the FWD INOP message is displayed on the CDU.

L (**-300/-500**) No cargo or baggage may be carried in the aft cargo compartment if the AFT INOP message is displayed on the CDU.

Electrical Power

Electrical Limitations

	-700	-300/-500	
Engine Generator Max Load amps	260*	There is no *AFM* limitation for this configuration.	
APU Gen Max Load amps	Ground/Air 260/188	Ground/Air 150/125	Ground/Air 160/140
Max TR Load with Cooling	75 amps	65 amps	
Max TR Load without Cooling	50 amps		
TR Voltage Range	22 - 30 volts	24 - 30 volts	
Battery Voltage Range	23 - 30 volts		
Max Constant Speed Drive Oil Temperature	N/A	157°C In 20°C Rise	
AC Voltage	115 ± 5 v		
AC Frequency	400 ± 10 cps		

✔ **AFM** **L** * On the ground, limit one generator operation (engine driven) to a maximum of 215 amps (**-300/-500**: N/A).

✔ **L** Do not remove AC power from the aircraft for at least 30 seconds after IRS shutdown.

P Do not use 120 volt galley outlets to power or recharge personal devices such as cellular phones or computers.

Enhanced Ground Proximity Warning System (EGPWS)

AFM **L** Do not use the terrain display for navigation.

AFM **L** The use of terrain alerting and terrain display functions are prohibited within 15 nm and approaching to land at an airport not contained in the GPWS terrain database.

Note: All airports within the U.S. that have a paved runway at least 3500 feet long are in the database.

Flight Controls

✔		**L**	Minimum speedbrake use altitude is 1000 feet AGL.
✔	**AFM**	**L**	In-flight, do not extend the speedbrake lever beyond the flight detent.
✔		**L**	In-flight, do not use speedbrakes unless flaps are fully retracted.
		L	Do not operate the aircraft at speeds in excess of 320 knots at weights over 143,000 pounds if the speedbrake wing load alleviation system is inoperative (**-300/-500**: N/A).
✔		**L**	Alternate flap duty cycle in-flight is one complete cycle, then 25 minutes off. A complete cycle is movement from position 0 to 40 and back to 0. The alternate flaps switch must be in the OFF position for 6 seconds before reversing the direction of flap movement.
✔		**L**	Do not extend flaps above 20,000 feet pressure altitude.

Fuel System

Fuel AFM		
	-700	**-300/-500**
✔ Max Fuel Tank Temperature	+49°C	
✔ Min Fuel Tank Temperature	-37°C ❶	
Max Fuel Quantity Each Wing Center	 8,967 lbs 29,685 lbs	 10,643 lbs 16,422 lbs ❺
Max Fuel Imbalance Taxi, T.O., Flight, and Landing	1000 pounds	
Fuel Types ❹	JET A, A1, JP5, JP8	
✔ Fuel Distribution	Main tanks must be full if the center tank quantity is greater than 1000 pounds. ❷❸❻ Use center tank to depletion followed by wing tank fuel.	

✔ **AFM L** Fuel crossfeed valve must be closed for takeoff and landing (**-300/-500**: N/A).

✔ **AFM L** For ground operation, center tank fuel pump switches must not be positioned to ON unless the center tank fuel quantity exceeds 1,000 pounds, except when defueling or transferring fuel.

✔ **AFM L** Center tank fuel pump switches must be positioned to OFF when both center tank fuel pump low pressure lights illuminate.

Note: The limitation does not change the existing normal procedure to turn the center tank fuel pump switches to OFF at the first indication of low pressure from either pump.

✔ **AFM L** Center tank fuel pumps must not be ON unless personnel are available on the flightdeck to monitor low pressure lights.

Notes:

❶ Jet A freeze point is minus 40° Celsius and other listed fuels freeze at lower temperatures.

❷ 1000 pounds may be retained in the center tank provided the effects of balance have been considered.

❸ (**-300/-500**) Center tank fuel pumps must be ON for takeoff with more than 1000 pounds of fuel in the center tank.

❹ Use of Jet B or JP4 in B737-300/-500/-700 aircraft is prohibited.

❺ Approximately 14,422 lbs on aircraft with “Center Fuel Tank Qty Limit” placard located in front of the refueling station.

❻ Some MEL items can override this limitation.

Center Tank Fuel Limitations from AD 2002-19-52 (-300/-500: N/A)

At All Times

✔ **AFM L** The fuel pump switches must be positioned OFF at the first indication of fuel pump low pressure.

AFM L The center tank fuel quantity indication system must be operative when dispatched with a fuel load that requires the use of the center tanks.

* **AFM L** If the main tanks are not full, the zero fuel gross weight of the airplane plus the weight of center tank fuel may exceed the maximum zero fuel gross weight by up to 5000 pounds for takeoff, climb, and cruise and up to 3000 pounds for descent and landing, provided that the effects of balance (CG) have been considered.

* This information is contained in the AD and is printed here as required by law. Southwest Airlines has chosen not to use this provision to exceed the maximum zero fuel weight.

Takeoff and Initial Climb

✔ **AFM L** Both center tank fuel pump switches must be positioned OFF for takeoff if center tank fuel quantity is less than 5000 pounds.

✔ **AFM L** When center tank fuel quantity is greater than 2000 pounds, turn on both center tank fuel pump switches above 10,000 feet or after reducing the pitch attitude to accelerate to 250 knots or greater.

Climb and Cruise

✔ **AFM L** If more than 2000 pounds of fuel remain in the center tank, both center tank fuel pump switches should be repositioned ON.

✔ **AFM L** Turn one center fuel pump switch OFF during climb or cruise when the center tank fuel quantity reaches approximately 2000 pounds. Open the crossfeed valve to minimize fuel imbalance.

When the MASTER CAUTION and FUEL system annunciator lights illuminate, turn the remaining center tank fuel pump switch OFF without delay and close the fuel crossfeed valve.

Descent

✔ **AFM L** Turn one center fuel pump switch OFF at the beginning of the descent if less than 3000 pounds of fuel remain in the center tank. Open the crossfeed valve to minimize fuel imbalance.

When the MASTER CAUTION and FUEL system annunciator lights illuminate, turn the remaining center tank fuel pump switch OFF without delay and close the crossfeed valve.

If an extended period of level flight is required prior to approach and landing, i.e., holding, and fuel remains in the center tank, a single center tank fuel pump switch may be repositioned ON if both fuel pumps were previously turned OFF. The fuel crossfeed valve should be opened to prevent fuel imbalance.

At the first indication of pump low pressure, the fuel pump must immediately be turned off and the fuel crossfeed valve must be closed. The fuel crossfeed valve must be closed for landing.

Notes:

- The CONFIG indicator will annunciate when center tank fuel exceeds 1600 pounds and the center tank fuel pump switches are OFF. Do not accomplish the FUEL CONFIG ALERT non-normal procedure prior to or during takeoff with less than 5000 pounds of center tank fuel or during descent and landing with less than 3000 pounds of center tank fuel.
- In a low fuel situation, both center tank pumps may be selected ON and all center tank fuel may be used.
- If a center tank fuel pump fails with fuel in the center tank, accomplish the Fuel Pump Low Pressure non-normal procedure.
- When transferring or defueling from either the center or main wing tanks, the fuel pump low pressure indication lights must be monitored and the fuel pumps positioned to OFF at the first indication of fuel-pump low pressure.
- Fuel may be transferred from tank to tank or the aircraft may be defueled with passengers on board, provided the fuel quantity in the tank from which fuel is being taken is maintained at not less than 2000 pounds. Deplane all passengers and non-essential crew when defueling a tank or transferring fuel from a tank that has a fuel quantity below 2000 pounds until the process has been completed and the respective fuel boost pumps are turned off.
- The limitations contained in this AD supersede any conflicting basic airplane flight manual limitations.

Hydraulic Power

L Minimum fuel for ground operation of electric hydraulic pumps is 1675 pounds in the respective wing tank.

Ice and Rain

Engine Anti-ice Use Requirements

AFM

Engine Anti-ice Required	• Icing conditions exist or are anticipated except during climb and cruise below -40°C SAT. • Engine anti-ice must be on prior to and during descent in all icing conditions, including temperatures below -40° C SAT.
Minimum N_1 Required: TAT 0° to + 10°C	❶
TAT below 0°C	❶
TAT <-6.5°C in Moderate/Severe Icing	❶
Moderate or Greater Precipitation	❶ Flt Ignition

❶ No minimum RPM required except for periodic runup as noted in Supplemental Procedures.

AFM L To reduce the risk of engine flameout when operating in, or in the vicinity of, moderate to heavy rain, hail, or sleet accomplish the following:
- Follow turbulent air penetration procedures.
- Engine start switches—FLT.

Notes:

- Operation in or near moderate to heavy rain, hail, or sleet is assumed if indicated by any of the following sources:
  - Weather radar.
  - Weather reports.
  - Observations.
- Flight operation within five miles of thunderstorm activity should be avoided.

✔ **AFM L** Holding in icing conditions with flaps extended is prohibited (**-300/-500**: N/A).

AFM L Window heat inoperative maximum speed is 250 knots below 10,000 feet.

AFM L Probe Heat (**-300/-500**: Pitot Heat) must be on for all phases of flight.

R Wait 1 minute prior to turning engine and APU bleeds on after deicing.

Landing Gear

P The autobrake system will only be used in the RTO position.

AFM L 270 knots/0.82 Mach for extension.

AFM L 235 knots for retraction.

AFM L 320 knots/0.82 Mach extended.

AFM L When towing, depressurize the hydraulic system A.

AFM L Do not apply brakes until after touchdown.

AFM L Takeoff with antiskid inoperative is only allowed on dry runways (**-300/-500**: N/A).

AFM L Maximum brake temperature for ground turnaround is 425 degrees Fahrenheit. Temperature must be measured between 10 and 15 minutes after arrival parking. Refer to Performance chapter for additional information.

This section outlines how Chapter 3 is organized. Starting with Section 2, Preflight, each section is in chronological order. This results in some duplication of information.

Organization and Conventions

Sections printed in bold type designate procedural directives. Pilots will follow these directives.

(CA) precedes all directives that apply only to Captains.

(FO) precedes all directives that apply only to First Officers.

(PF) precedes all directives that apply only to the Pilot Flying.

(PM) precedes all directives that apply only to the Pilot Monitoring.

If no designation precedes the directive, it applies to both Pilots.

Supporting information follows many directives. It is indented and printed in normal typeface (not bold). This supporting information provides additional detail and explanation for the directive. Often, the intention behind a directive is included to provide guidance for effective decision-making. When faced with 'gray areas' in line operations, Pilots are expected to follow this stated intention. These sections also describe the expected standard for completing a directive. This feature is commonly used with checklists and flows.

- Subordinate directives are indented, bold, and preceded by a dash. They cover additional options and cases not explicitly covered under the main directive. Checklists and flows commonly use this feature.

Warning: Warnings describe aspects of procedural directives, techniques, etc. that may result in personal injury or loss of life if not carefully followed.

Caution: Cautions describe aspects of procedural directives, techniques, etc. that may result in damage to equipment if not carefully followed.

OpSpec: Operations Specifications (OpSpec) are specific limitations, conditions, and other provisions which operators must comply with. They comprise a 'contract' between the FAA and the Company that specifies how an operation will be conducted. OpSpec requirements are mandatory.

Text in bold and quotes, (Example: **"Go-Around Thrust"**) reflects actual required verbiage. Text in single quotes, (Example: 'Engines - OFF, APU - ON.') reflect example, optional, or variable verbiage.

Note: Notes provide additional information that improves understanding of the required task.

Crew Coordination

CAs are responsible for decisions affecting the conduct of their flight.

Use all available resources to assist with operational decisions. Southwest Airlines FOs have all previously been Pilots-in-Command and therefore should be treated as experienced Pilots who are in training to be CAs at Southwest Airlines.

Both Pilots are responsible for coordinating their efforts in every phase of the flight.

Pilots should support each other and adjust to the many varied personalities with whom they are required to fly. Pilots should encourage constructive feedback. The CA and FO are jointly responsible for establishing and maintaining a positive work environment.

Pilot Duties, Responsibilities, and Restrictions

Comply with all applicable FARs and Southwest Airlines policies/directives.

Promote standardization in all Southwest Airlines procedures.

Operate the aircraft as a crew.

The Southwest Airlines operational philosophy is to operate our aircraft as a crew. The CA is responsible for continually building and promoting an effective team.

Ensure that your primary attention is focused on crew duties during the conduct of the flight.

Pilots are expected to effectively prioritize flightdeck tasks. Occasionally, Pilots engage in unnecessary tasks or allow themselves to become distracted. There should never be a time when both Pilots allow themselves to be taken out-of-the-loop. When Pilots need to divert their attention away from primary flight duties, they should advise the other Pilot.

Suspend all discretionary tasks during Dynamic Conditions.

Discretionary tasks are defined as tasks that involve either pilot unnecessarily diverting attention from primary duties. Discretionary tasks are actions that do not support that phase of flight, are optional, or can be performed later.

Dynamic Conditions are defined as:

- During ground operations - any time the parking brake is released.

- During flight operations - any time other than steady-state straight and level cruise flight.

Do not perform maintenance, of any kind, on Southwest Airlines' aircraft.

This directive includes Pilots that possess an A&P certificate. Pilots may enter the E&E compartment of the aircraft to inspect or troubleshoot but they may not reset, cycle, or rerack any aircraft component, radio, or circuit breaker within the E & E compartment.

✔ A tripped circuit breaker may only be reset once. Allow approximately 2 minutes for cooling before resetting. An in-flight reset should only be accomplished, if in the judgement of the Captain, regaining use of that system is critical to the safe conduct of the flight.

Except when the MEL specifically states otherwise, do not remove, block, or cover any warning light, caution light, or system position light.

"Tour" flights are prohibited.

Respond immediately to TCAS TAs and RAs.

TA and RA response procedures are different. See Non-normal Operations — Maneuvers/Profiles.

While on or around Southwest aircraft, or in public view, wear the required uniform.

'Public view' is defined as anytime the crewmember leaves the aircraft or immediate jetbridge area. Examples include moving through the terminal area, walk-arounds, trips to Operations or Maintenance, and meeting the aircraft on a crew change. It is unacceptable to fly out-of-uniform or without other required items on any revenue flight. Some uniform requirements may be temporarily waived for Company convenience with the approval of the V. P. of Flight Operations, the Director of Flight Operations, the Director of Flight Standards, the Director of Training, or a Chief Pilot.

When in public view, deadheading crewmembers are encouraged to wear the required uniform.

When on-duty or when exercising pass privileges, Pilots will conduct themselves in appearance and manner so as to reflect credit on Southwest Airlines and the profession.

In the flightdeck, do not display or read material not pertinent to flight operation.

This restriction includes any personal discretionary activities that divert a Pilot's attention - such as reading newspapers, magazines, other recreational materials, and viewing personal laptops or media players.

Only material and publications supplied by Southwest Airlines will be used for critical phases of flight and navigation.

For instance, the use of V Speed reference cards, flight planning sheets for navigation, or approach charts from other sources is not authorized.

Critical phases of flight are defined as operations below 10,000 feet MSL (except on the ground with the brakes set and cruise flight below 10,000 feet MSL).

Do not use transportable phones in view of our Customers - either on the aircraft or in the jetbridges. Crewmembers may use transportable phones in the jetbridges and/or onboard as long as passengers are not boarding, deplaning, or onboard the aircraft.

The intention is to maintain a professional appearance and service for our Customers. If jetbridge phones are inoperative or unavailable, CAs may find it convenient to contact Dispatch, Maintenance, or Scheduling using personal phones. In this case, exercise discretion.

Pilot Duties - Normal Operations

The following are Normal Pilot Functions. Additional Pilot duties specific to each phase of flight are covered in each FOM section. Both Pilots will:

- Review applicable NOTAMs, designated Special Airport pages, Dispatch Release, Alternates, and Weather Package to include reported and forecast weather conditions.

- Flight and NAV instruments - crosscheck for consistency and accuracy.

No inappropriate flags should be present.

- Monitor systems for warning flags, lights, or out-of-tolerance conditions.

- Check all guarded switches closed and safetied, as needed.

Have safety wires (switches) and pin seals (fire extinguisher) replaced, when convenient, while transiting maintenance bases.

- Perform normal system functional checks, as necessary.

For example: Performing a periodic assessment of the aircraft electrical system.

- Check the circuit breakers when entering the flightdeck, before taking your seat. Accomplish this circuit breaker check at least once before every flight.

- Fasten seat belts during all aircraft movement.

- Fasten shoulder harnesses at a minimum:

- Takeoff: From before commencing pushback until flaps indicate UP.
- Landing: From the Descent Checklist until clearing the runway.

Captain (CA) Duties and Responsibilities

Exercise full command. Make the final decision in all matters pertaining to the proper conduct and safety of the flight.

The Vice President of Flight Operations will designate the CA's Pilot-in-Command duties through certification and the Dispatch Release.

Promote a crew environment that solicits open communication.

- Provide instruction to the FO, as necessary, to ensure professional growth and ensure proficiency.

- Advise the FO of deviations from established policies, procedures, and/or regulations.

- Exercise joint responsibility with the Dispatcher for the proper preflight planning, planned delays, and the Dispatch Release of the flight.

- Verify that the Loading Schedule (Load Sheet), Weather information, NOTAMs, flight plan, and Dispatch Release, are onboard the aircraft prior to each departure.

- Ascertain that the fuel onboard the aircraft is correct for the specific flight conditions and that it complies with FAR fuel requirements for flight.

- Make the Landing anytime an engine is shutdown.

Occupy the left seat at all times. Designated Check Pilots may occupy the right seat.

Inform Dispatch of changing conditions that might adversely affect other flights.

Ensure required Maintenance actions are completed when passing through a Maintenance Base.

This includes tasks such as transferring MELs from Pilot deferred (yellow) to Maintenance deferred (white) stickers and oil servicing.

When encountering a Maintenance problem during nighttime hours, passengers should be removed before powering down the aircraft.

Ensure the accuracy of all logbook entries. Determine that all flight records have been completed, including the entry of each mechanical irregularity that occurred during the flight. Ascertain that the flight times and totals are correct.

- (-300/-500) Ensure the in-flight monitoring log is completed once each aircraft day.

- Ensure a maximum thrust takeoff was completed within the last 10 days.

If a maximum thrust takeoff has not been logged, the aircraft is still airworthy. A maximum thrust takeoff is required on the next takeoff. A maximum thrust takeoff is defined as full rated thrust as computed by the FMC and OPC.

- Ensure the oil quantity is recorded within 30 minutes of engine shutdown on terminating flights. Comply with terminating flight oil servicing requirements.

Coordinate aircraft discrepancies with Dispatch and Maintenance Control.

When at a Maintenance base, coordinate discrepancies with local Maintenance Personnel.

Complete the following actions anytime write-ups are entered in the logbook.

Note: For additional information, see "Communications: Reporting/Coordinating Maintenance Items" and the "Logbook," "MEL Preamble and Policy," and "Missing Airworthiness Certificate" sections of the appendix.

- Contact Dispatch to ensure any MEL items or restrictions are properly recorded on the Dispatch Release.

- Ensure that the flight plan is accurate for any new restrictions imposed by the *MEL*.

- Contact Maintenance Control through Dispatch to ensure the write-up is correctly entered in the logbook and Maintenance tracking system.

- Acquire and record a tracking number, if required.

- Complete and apply required yellow MEL stickers.

Monitor any fueling operation requiring the use of fuel dripsticks to ensure the accuracy of readings according to MEL procedures.

Aircraft fuel tanks must be dripsticked to verify fuel quantity after a ground transfer of fuel. See "Supplemental Procedures: Operations Procedures: Fuel Procedures: Ground Transfer of Fuel."

Perform normal fuel system management (pump selection and fuel balancing).

First Officer (FO) Duties and Responsibilities

Exercise Second-in-Command duties.

Assume, secondarily, all responsibilities of the CA. Should the CA become incapacitated during flight, assume command of the aircraft. If another Southwest Airlines CA or Lance CA is onboard, they should subsequently take command of the aircraft, depending on the circumstances.

Advise the CA of deviations from established policies, procedures, and/or regulations.

Assist the CA in preflight planning.

Conduct an exterior preflight inspection on all originating flights, aircraft changes, or whenever there is an FO crew change.

For terminating flights, conduct an exterior postflight inspection at all stations except at Maintenance Bases, or if met by Southwest Airlines Maintenance personnel.

Maintain the recording of the flight log (including engine monitoring log once each aircraft day, flight times, block times, and any other pertinent information).

Attempt to complete the engine monitoring log as early as possible in the scheduled flight sequence of that aircraft. If the early legs are especially short or busy, delay this task until a more convenient flight. Ensure that the engines are stabilized at Cruise for at least 5 minutes.

Record "Fuel-in" as required. See Appendix—Logbook.

Normally, the FO will control cabin and flightdeck temperature and air flow for passenger and crew comfort.

Perform other duties assigned by the CA.

Pilot Flying (PF) Duties and Responsibilities

During ground operations, the CA is the PF. From Takeoff to Landing, the CA may assign the PF role to the FO. The PF's goal is to operate the aircraft as safely and professionally as possible. The PF will apply the following principles:

- Complete general flight duties.

Fly the assigned courses, speeds, and altitudes. Normally, the PF will navigate via LNAV.

- Provide the highest quality of service to the Customer.

To provide the highest level of service to our Customers, the PF strives to make the flight as pleasant as possible. This includes HOW WE FLY the aircraft (smooth flight control inputs and thrust setting changes) and WHAT WE SAY to keep the customer informed of normal conditions (expected ride, position reporting, etc.) and exceptional occurrences (mechanicals, weather delays, reroutes, etc.).

- Maneuver the aircraft smoothly.

Use smooth and steady control inputs that instill in your passengers confidence in your flying skills. The people in the back of the aircraft should barely notice your turns, climbs, descents, and level-offs.

- Strive for optimum performance.

Southwest Airlines operating procedures and policies optimize safety, aircraft engineering design, and efficiency. Each Southwest Pilot will strive to conduct the flight at this optimum standard. Real-world conditions may require Pilots to reasonably alter the desired sequence of flight tasks (Example: Extending the landing gear before flaps) or the time when tasks are accomplished (Example: The time when passenger convenience PAs are made).

- Support the Team approach.

The PF embraces the team approach. When it is 'our leg,' pride of accomplishment drives us to give our best effort. We should avoid attitudes that promote 'Single Pilot' behavior, or incomplete communication. The PF will verbally acknowledge all deviation and informative callouts and make timely corrections.

- Communicate the plan.

For normal operations, FOM procedures will be used as the plan. When conditions dictate a change, that change must be clearly stated by the PF, and must conform to operational priorities. Changes will not be made to fulfill the personal needs of crewmembers.

The CA is responsible for guiding the crewmembers involved in the plan. During each phase of the flight, the crew will work together to form, execute, monitor, and alter the plan, as conditions require.

- Perform necessary weather avoidance.

Before altering course or altitude for weather, the PF will communicate the weather avoidance plan with the PM. The PM will acquire the necessary clearance from ATC and monitor the new course.

Pilot Monitoring (PM) Duties and Responsibilities

During ground operations, the FO is the PM. The PM's goal is to monitor and support the PF. The PM will apply the following principles:

- Ensure Safety.

Speak up anytime you detect a developing trend away from standard procedures or stated intentions. This is in addition to required deviation callouts. The standard for speaking-up is deviation, not personal comfort level. As a rule, do not wait until you are uncomfortable with a situation to speak up. In many accidents and incidents, the PM was aware of the

impending failure, but felt inhibited from speaking up. Research has shown that PMs are poor judges of the PF's level of task saturation. It is more prudent to make a callout than to assume that the PF will independently detect and correct the deviation. Remember, the PM is often the last line of defense in accident prevention.

- Assist the PF.

The PM actively assists the PF to safely and professionally complete the flight. The PM is guided by the standard, 'What can I do to assist the PF in planning and executing this flight?' The PM thinks ahead to anticipate planning and information needs.

- Improve Situational Awareness

Situational awareness is a very fragile condition in aviation. The PM works to improve the crew's level of situational awareness. This involves acquiring information, communicating options, and assisting the PF in building and executing the plan.

- Repeat all commands involving aircraft configuration changes prior to executing them.

- Answer Flight Attendant service interphone calls.

If the PM is occupied with other priorities (for example: acquiring ATIS or making a Company call), the PF may answer the Flight Attendant call as long as it does not interfere with PF duties and ATC monitoring.

Public Address (PA) System

(PM) Make all normal and routine PAs.

The PM will make all normal and routine PAs while in flight. Either Pilot may make PAs while the aircraft is stationary with the parking brake set. The timing of PAs should be based on flight conditions and crew workload.

Use the PA for the following:

- Provide required passenger safety briefings

- Give routine announcements

For the best results, use the hand microphone rather than the headset boom microphone. Never let nonessential announcements interfere with the primary task of monitoring the aircraft. Wait until Cruise flight to make general or 'nice to know' PAs. On late night or early morning flights, limit nonessential announcements to avoid disturbing sleeping passengers.

To provide the highest quality information to our Customers, observe the following rules for making PAs:

- Avoid degrading or derogatory remarks about others, such as ATC, other air carriers, light or general aviation aircraft, etc.

- Keep the passengers informed in a manner that will put them at ease when a flight encounters, or expects to encounter, unusual conditions such as turbulence, delays, or reroutes.

- Make a PA announcement anytime the seatbelt signs are switched ON or OFF.

The quality of our Customer Service depends on what we say to keep our Customers informed of normal conditions (expected ride, position reporting, etc.) and exceptional occurrences (mechanicals, weather delays, reroutes, etc.).

(CA) Make Critical or Safety PAs, as necessary.

Anytime there is a safety need or a need to relay critical information to the cabin, make a PA or direct the FO to make the PA.

If time allows, or if information is not appropriate for passengers, use the flightdeck-to-cabin interphone system. For all other PAs, transfer aircraft control to the FO.

Sterile Flightdeck and Critical Phases of Flight

Follow Sterile Flightdeck rules below 10,000 feet.

Maintain the required sterile flightdeck environment during critical phases of flight. Critical phases of flight are defined as operations below 10,000 feet MSL (except on the ground with the brakes set and cruise flight below 10,000 feet MSL). Limit conversations and activities to those required to operate the aircraft.

In accordance with this guidance, the following procedures will be followed:

- Grant flight attendant requests to enter the flightdeck in critical phases based on the urgency of the situation and good judgment.

- Make routine flightdeck PAs at or above 10,000 feet MSL.

- Make Station calls at or above 10,000 feet MSL.

No crewmember may engage in, nor may any pilot-in-command permit any activity during a critical phase of flight which could distract any crewmember from the performance of duties or which could interfere in any way with the proper conduct of those duties.

Between 10,000 feet and FL180, limit times when one Pilot is off frequency.

Error analysis has shown that non-essential activities such as routine PAs or calling the Station, can create a Single Pilot mode where one Pilot is, effectively, out-of-the-loop. During these Single Pilot operations, the crew is particularly vulnerable to distraction and error.

At all times, Pilots (including jumpseaters) will remain focused on flight tasks.

Pilots will avoid discretionary activities that may divert their attention from aircraft operation. These include any flight tasks not defined in FOM directives or tasks that can be delayed until a low workload phase.

Actions such as OPC programming, in-range reports, arrival procedures and approach briefings will normally be accomplished at Cruise. If these activities must be accomplished below FL180, Pilots will take extra care to monitor ATC communications and assigned restrictions.

Use of Checklists

Normal checklists contain:

- Items essential to safety of flight that are not monitored by an alerting system

- Items that enhance safety of flight that are not monitored by an alerting system

- Items essential to safety of flight that are monitored by an alerting system but if not done, would likely result in a catastrophic event if the related alerting system fails

- Items required by regulatory agencies

- Items on the shutdown checklist that could result in injury to personnel or damage to equipment if not done

Use Southwest Airlines printed checklists.

Southwest Airlines checklists, both normal and non-normal, use a positive and sequential method to verify that critical items have been correctly accomplished. The normal operations checklists have been designed to minimize distractions and verify the correct systems status. Deviations from, or modifications to, established checklist procedures could result in omitted items or improper actions that can gravely affect operational safety. The CA is responsible for proper checklist completion.

After each Pilot completes a flow pattern, checklists are completed as follows:

1. The PF (CA during ground operations) calls for the appropriate checklist. For example: **"Before Start Checklist."**

2. The other Pilot holds the checklist card or places it on the yoke clip, then reads the first checklist item.

3. Both Pilots verify that the applicable system or item is set or completed.

4. The PF (CA during ground operations) replies with the required checklist response.

5. This process continues with the remaining checklist items.

6. When a checklist is completed, the PM (FO during ground operations) will announce: **"_____Checklist Complete."**

Missed Checklist Item: All Checklists are designed in a challenge-and-response or read-verify-and-respond format. If an item was missed during the preparation or flow and is then discovered during the checklist:

- Correct the setting

- Verify any system response indications

- Respond to the checklist step.

When reading the checklist step, **"Recall,"** press and release your system annunciator panel.

The two greatest hazards to checklist completion are distraction and complacency. Ensure that both Pilots are able to devote their attention to the checklist.

Reaccomplish the appropriate checklist anytime:

- Both Pilots become distracted,

- After lengthy delays, or

- Flaps are reconfigured after completion of the Before Taxi Checklist.

If the distraction is momentary and affects only one Pilot, repeat the previously completed checklist step. If there is any doubt, reaccomplish the entire checklist.

The second hazard to checklist completion is complacency. Always take the time to verify each item before responding or moving to the next checklist step.

Read the checklist steps and responses verbatim from the Flightdeck Checklist card.

When the response is printed, 'As Required', the verbal response should indicate the condition of the system. For example, the response to the Before Taxi Checklist item, **"Anti-ice,"** could be 'OFF,' or 'Engine ON and Wing OFF.'

Flight Management and Automation Policy

Both Pilots will maintain proficiency in the use of aircraft automation.

Maintain situational awareness regardless of the level of automation in use at the time.

Ensure that both Pilots are aware of entries and changes to automation systems.

If the PF is manually flying the aircraft, the PM will normally make requested selections on the MCP panel. This does not prevent the PF from making changes (except for the altitude window), if desired, or when operational priorities prevent the PM from accomplishing the required changes in a timely manner.

When using the autopilot, MCP selections (except for the altitude window) will normally be made by the PF.

Ensure that automation tasks do not interfere with outside vigilance during VMC.

(CA) If operative, use the autopilot 'A' channel when flying.

(FO) If operative, use the autopilot 'B' channel when flying.

Normally, Pilots will operate their respective VHF NAV radio and course selector.

Communicate any changes made to either Pilot's VHF NAV radio.

Ensure that the Jeppesen charts appropriate to the particular phase of flight are in plain view.

Plain view is defined as being open and accessible for immediate reference. The intended locations are the yoke clip or the sliding window clip.

If you become task saturated by CDU programming, revert to conventional navigation and refer to the Jeppesen documents appropriate to the particular phase of flight.

Keep programming tasks to a minimum below 10,000 feet. For example, when assigned a late runway change on a visual approach, retain the existing FMC program and revert to the charted approach.

(PM) (-300/-500) Select the HSI selector switches to NAV during LNAV operations to allow dual-NAV updates to the FMC.

When the PF is manually flying the aircraft, the PM normally makes selections on the CDU.

When the PF is controlling the aircraft through the autopilot, CDU selections will normally be made by the PF.

However, the PF may ask for CDU entries to be made by the PM. This situation could occur when only one CDU is installed and the CA is the PF.

Both Pilots will verify the CDU entries before the new data is executed.

Communicating Intentions, Informative Callouts, and Interventions

The crew applies FOM procedures within highly variable real-world conditions. The PF is responsible for developing, communicating, and executing the plan to achieve Southwest Airline's goals. To achieve these team goals, the crew must be of 'one mind'. This requires clear and consistent communications.

Comply with the following principles:

- Communicate intentions.

To operate effectively, the crew will share information. Both Pilots will clearly understand and agree with the intended operation of the aircraft. The PF is responsible for communicating the plan to the PM. Additionally, the PM will ask questions and clear up any areas of confusion.

- Make informative callouts.

The informative callout is a simple statement of fact or condition that identifies a deviation from the plan. When the PM detects a developing trend away from the stated intention or briefed plan, the PM will callout the deviation ('groundspeed 35 knots' or 'airspeed 275'). The PF will verbally acknowledge all callouts and begin a correction. The PM will allow a reasonable time for correction. If the correction is not made or is ineffective, the PM will repeat the callout.

- Make necessary interventions.

The PM is the last line of defense against an unsafe operation. Normally, the PM starts with an informative callout. If an adequate correction is not made and the time for a safe correction grows short, the PM may need to intervene to break the error chain. If the PF does not acknowledge the callout, fails to make an adequate correction, and/or failure is imminent, the PM will intervene. This intervention is dependent on the situation and may range from a forceful statement to taking control of the aircraft.

Communication and Verification Process

Comply with the following principles:

- Communicate effectively using the following tools to improve communications:

Standard Procedures: Standard procedures contribute to clear communications. Standard procedures allow crewmembers unfamiliar with each other to operate smoothly with minimum practice.

Standard Terminology: Standard terminology transmits the message most efficiently. Both the sender and receiver have a common reference to interpret meaning. This is especially important with ATC communications.

Standard Calls and Callouts: Standard calls and callouts convey the most information with the fewest words. Additionally, standard calls/callouts give us quick ways to initiate complex procedures during busy periods (Example: **"Go-around Thrust"**).

- Verify Changes.

As a general rule, any flight task or action performed by one Pilot should be verified or verifiable by the other Pilot. In most cases, the Pilot performing a task need only alert the other Pilot of the action (Example - 'Anti-ice is coming ON'). Communication of plans or intentions may require additional verbal exchange.

- Anytime one Pilot alters an aircraft system or moves a switch (outside of primary flight control inputs), the other Pilot needs to monitor/verify the change.

This does not imply that one Pilot is asking for permission to make the change. It only requires that the Pilot changing parameters informs or communicates the change - allowing the other Pilot to verify the change.

Examples of items that are normally verbalized:

- Engaging the autopilot

- Pilot-initiated systems changes - fuel balancing, anti-ice operations

Examples of items that are not normally verbalized:

- Normal thrust changes and flight control inputs (For example: speed brake inputs)

- Personal adjustments of aircraft lighting

- Normal frequency changes

- (PF) Transfer aircraft control, when necessary.

Transfer of aircraft control must be concise and clear. There can be no doubt about who is controlling the aircraft. Therefore, when aircraft control is transferred, announce, **"You have the aircraft."** The Pilot assuming aircraft control will acknowledge, **"I have the aircraft."**

- (PM) Assume aircraft control, when necessary.

If you need to take control of the aircraft for safety reasons or required by specific procedures, announce, **"I have the aircraft."** The other Pilot will acknowledge, **"You have the aircraft."**

- Communicate plans and intentions.

The PF is responsible for communicating intentions. If the plan is clearly covered by FOM normal procedures, then no additional communication is required. Whenever there are multiple options, the PF will communicate the intended plan. As a measure of this standard, the PM should never have to 'mind read' the PF. The PM should have a clear idea of the PF's intentions at all times.

- Clear-up areas of confusion.

If you become confused about the other Pilot's intentions, speak up. Often, this area fails at the very beginning because we are reluctant to admit our confusion.

- Receive updates after temporarily leaving the ATC frequency.

If you need to leave the ATC frequency (calling the Station, acquiring ATIS, etc.), inform the other Pilot. Ensure that the other Pilot is monitoring ATC.

When you return, ensure that the other Pilot briefs you of any ATC changes that may have occurred.

Confirming ATC Clearances

If either Pilot is uncertain about an ATC clearance, ask ATC to repeat it.

Error analysis has identified ATC clearance confusion as a major source of altitude and course errors. Whenever there is any question concerning an ATC clearance, do not try to resolve the issue within the flightdeck. Instead, use ATC as a tiebreaker to clear up any confusion.

Record ATC clearances, as necessary.

Write down complex or restrictive clearances such as intermediate clearance limits and holding instructions. Record sufficient information to reference or review the ATC clearance instructions. This requirement is not intended to burden the Pilot, particularly in congested areas, when attention should be devoted to safe aircraft operation.

Generally, there is no requirement to record routine ATC clearances.

Altitude Clearances and Callouts

When ATC assigns a new altitude clearance or when cleared to a new altitude on a charted profile departure or arrival, accomplish the following:

- (PM) Acknowledge the clearance and set the new altitude restriction in the MCP altitude window.

- (PF) After the PM has set the correct altitude in the MCP altitude window, verbally acknowledge the new altitude assignment.

- (PF) If operational necessity requires an MCP altitude change and the PM is occupied with other priorities, the PF may acknowledge and set the new altitude.

For example: When the PM is off frequency calling the Station, the PF may acknowledge the new altitude assignment and set it in the MCP.

At 1000 feet prior to an assigned altitude, call the passing altitude for the assigned altitude.

For example, when leaving FL 240 for FL 250, an acceptable call would be '24 for 25.' The callout is made off of each Pilot's altimeter reading, not the altitude alert tone. If the passing altitude call is missed, call the current altitude. For example, the call might be, '24.3 for 25.' The intention is to promote and communicate altitude awareness and to ensure that the aircraft is leveling at the correct altitude by verifying altimeter indication and setting.

Recall and Master Caution

When required, perform a Recall Check.

- Depress either system annunciator light panel.

- Verify that both MASTER CAUTION lights illuminate.

The MASTER CAUTION system functions even if the individual system annunciator lights do not illuminate. It is not necessary to repeatedly press one or both panels to get all of the system annunciator lights to illuminate. Simply press and release either system annunciator panel.

- Release the system annunciator light panel.

The MASTER CAUTION lights should extinguish. If the MASTER CAUTION lights remain illuminated, with or without individual system annunciator lights, investigate the cause.

Respond to any MASTER CAUTION lights when they illuminate during operations.

When the MASTER CAUTION lights illuminate, note the accompanying system annunciator light. Then, respond as follows:

- MASTER CAUTION from known cause with normal Pilot flow items:

If the warning is caused by a routine crew action, cancel the MASTER CAUTION, and continue normally. An example is the ANTI-ICE light that illuminates after PROBE/PITOT HEAT switches are turned OFF.

- Known cause from Pilot actions:

  If the warning is caused knowingly by Pilot action, simply announce the cause to the other Pilot, cancel the MASTER CAUTION, and continue. An example is fuel balancing. Announce your intention to balance fuel, confirm the MASTER CAUTION and FUEL annunciator, and cancel the light.

- Unknown or delayed cause:

  Anytime the MASTER CAUTION light illuminates as a system alert, perform the following steps:

  - Note the illuminated system annunciator light(s).
  - Check referenced system panel(s) and note any illuminated lights.
  - Verbally communicate the indications or malfunctions.
  - Cancel the MASTER CAUTION.
  - Complete any checklist or QRH procedures, as required.

Do not intentionally leave the MASTER CAUTION light illuminated.

Do not leave the MASTER CAUTION light illuminated as a memory cue while performing any task (Example: fuel balancing). This undesirable practice defeats the alerting function of the Master Caution system. Any new warning would not generate a caution event.

Thrust Setting Definitions

Maximum Takeoff Thrust Setting: This is the full rated takeoff thrust for the installed engines as computed by the OPC (when 'Takeoff Thrust: MAXIMUM' is selected) and by the FMC (when the outside air temperature is entered). Use Maximum Takeoff thrust when it is required by the OPC (MAX N_1), FOM, or MEL.

Reduced Takeoff Thrust Setting: This is a reduced thrust setting computed by the OPC (i.e., 'Takeoff Power: REDUCED') and displayed as 'RED N_1.' If operationally feasible, use Reduced Thrust Settings whenever possible.

Emergency Thrust: This thrust is produced when the thrust levers are advanced to the forward stop. There are no FMC or OPC computed values for this thrust setting. It is intended for emergency use only (Examples: Windshear Encounters, Terrain Avoidance, or Stall Recoveries). On engines without electronic thrust limiting capability (EECs or PMCs), this may cause an engine limit exceedance and require a logbook entry.

Go-Around Thrust: This is the thrust normally used during a go-around/missed approach. It is computed by the OPC and the FMC. Normally, go-around thrust is automatically computed by the FMC and indicated by the N_1 bug.

The intention is to minimize Single Pilot operations and reduce workload during the Descent and Approach phases. Most of the arrival tasks are scheduled prior to the Top of Descent (TOD) point. The process follows this general flow:

- (PM) Before TOD duties:
  - Acquire the ATIS
  - Call In-Range to the Arrival Station
  - Make a passenger PA (optional)
  - Program the OPC to evaluate landing performance
- Both Pilots evaluate the conditions and agree on a plan.
- Both Pilots evaluate OPC results and landing conditions.
- Both pilots set their approach speeds and altimeter reference markers.
- (PF) Brief necessary arrival and approach items.

As a general point of reference, start about 40 NM short of the FMC-computed TOD. TOD is defined at that point where the FMC profile computes a continuous descent from Cruise altitude down to the arrival airport or charted/programmed crossing restriction. For airports where ATC gives step-down arrivals, or for low altitude Cruise, start about 150 NM out.

Arrival ATIS, In-Range Call, and Arrival PA

(PM) Acquire the arrival weather through broadcast ATIS or ACARS.

Do not delay this task to wait for new ATIS at the top of the hour. Experience has shown that weather changes between hourly observations do not have a significant effect on landing performance computations. The higher priority is completing all Descent and Approach planning tasks before starting Descent.

If you are unable to acquire the ATIS, for whatever reason, use the latest hourly observation from the Weather Package (shorter flights) or from Enroute updates from Dispatch (longer flights). Due to terrain masking, this may be the normal practice for some city pairs (Example: ONT arrivals from the north).

(PM) Make an In-Range call to the Arrival Station.

Call the Arrival Station with:

- Expected gate arrival time

- Expected gate arrival fuel
- Time-sensitive service requests
- Verification of Gate Services

Make the transmission concise to keep the frequency open for operational needs. Routine service requests should be delayed until parked at the gate. After establishing contact with the station, a typical call would be, '123 in range, arriving at 50 with fuel 10.2.'

If the entire flight is conducted below 10,000 feet MSL, the In-Range report may be completed in cruise.

If unable to contact the arrival station via radio or ACARS, contact the station after landing. Again, the priority is completing planning tasks before beginning descent.

(PM) Make an Arrival PA to the passengers, if desired.

OPC Programming for Landing

(PM) Evaluate landing performance on the OPC.

- Select the Landing Performance module.

- Select the arrival airport.

The OPC will display a message if the selected airport is a Special Qualification Airport.

- Select all available landing runways.

Do not select every runway, only the available runways (e.g., if LAX is landing west, do not select 6R/L or 7R/L). By selecting the available runways, OPC landing data can be easily analyzed, and the best landing runway selected. Also, if ATC changes the runway assignment, the new landing data is readily available.

It is company policy to avoid noise sensitive runways, except for operational necessity.

Input NOTAM restrictions, if required.

- Enter ATIS information.

Wind conditions reported as "light and variable" may be entered into the OPC as CALM.

- Select the OPC Landing Input screen.

- Enter runway conditions.

If other than DRY, toggle to the reported runway condition. All selections are used only for braking action reports, if necessary.

If rain (RA) is reported in the observation, and no other braking action reports are indicated, select WET-GOOD.

Note: This selection is independent of visibility.

- Select landing flaps.

It is Southwest Airlines policy to land with Flaps 30, where applicable. Flap 40 landings are strongly recommended in the following situations:

- OPC stopping margin under "Min(2)" is bracketed for Flaps 30 - Example: [-240].

- Reported braking action is less than "GOOD."

- Weather is at or near minimums for the approach to be flown.

Notes:

- The Flightcrew may wish to modify the landing flap selection based on the stopping margin results of the Landing Output screen.
- Landing performance limits or non-normal conditions may require the use of less than flaps 30 or 40.

- Select HUD/AIII, if required.

If planning to fly an approach to landing using HGS AIII guidance, select the HUD/AIII toggle. This applies for both required (low visibility) and practice approaches.

This selection will increase the computed landing distance (Approx Landing Dist) by 1000 feet.

- Select RVR < 4000, if required.

If the RVR is less than 4000 feet or the visibility is below 3/4 mile, select the RVR < 4000 toggle. Do not make this selection if the visibility is greater than 4000 RVR or 3/4 of a mile regardless of runway surface conditions.

OpSpec: Pilots are not authorized to begin an approach to a runway with less than 3/4 mile or 4000 feet RVR if the actual landing weight is greater than the wet runway landing weight.

There are two situations where the FARs require an additional 15% above the dry runway landing field length. One is when the destination runway is known or forecast to be wet. This will be checked by the Dispatcher and is a function of the OPC Dispatch Landing Performance module only. The second situation is when the RVR is less than 4000 feet or the visibility is less than 3/4 of a mile. In this case, the Flightcrew is responsible for determining that the required additional landing field length is available.

Selecting the RVR < 4000 toggle ensures that the FAR landing distance field length requirement for a low visibility approach is met. Selecting the RVR < 4000 toggle will not increase the OPC "Approx Landing Dist." However, if the OPC determines that the available landing field length is less than 115% of the dry landing field length, "[RWY]" will be displayed in lieu of the "Approx Landing Dist." If this is the case, landing is not allowed on the selected runway.

Note: This selection is independent of runway conditions.

- Enter the Landing Weight.

Subtract remaining fuel burn from actual aircraft weight displayed on CDU – PROGRESS Page 1. Input the value in the OPC "Wgts" block.

- Select an Air Conditioning option, if required.

Select BLEEDS ON or BLEEDS OFF.

- Select an Anti-ice option, if required.

If enroute icing was encountered and the forecast landing temperature is below 10°C (**-300/-500**: 8°C) or the use of anti-ice is anticipated for landing, select the appropriate configuration. If anti-icing was used or icing was encountered any time prior to the approach, select ENROUTE ICING ONLY.

If expecting to use anti-icing during the approach, select ENGINE - ON or ENGINE & WING – ON.

Any selection other than OFF applies an enroute icing penalty to the maximum approach climb weight calculation.

- Evaluate the Landing Output screen.

The choice of landing runway should be based on factors such as stopping margin, runway condition, crosswind component, and runway length. ATC assigned runways may not always be the best choice. Flightcrews should evaluate all relevant factors and make a prudent decision.

- Highlight the anticipated landing runway on the Landing Output screen.

This action completes the computation for V_{TARGET} and Quick Turn weight and triggers the OPC to provide the "Auto brakes required" message when appropriate.

Requirements for Landing

(CA) Do not continue toward any airport if, in the Captain's or Dispatcher's opinion, the flight cannot be completed safely. If the Captain believes there is no safer procedure, exercise emergency authority and continue toward that airport.

Southwest Airlines is not authorized for Land and Hold Short Operations (LAHSO) at any airport.

Any time ATC offers LAHSO operations, state, 'Southwest ____ is not authorized for LAHSO operations.'

Landing is not authorized under the following weather and lighting conditions:

- Limit HGS use to 25-knot maximum headwind any time HGS is required (approaches below 1800 RVR or Special CAT I approaches below 2400 RVR).

Note: The OPC does not highlight this headwind limitation.

- Weather conditions are below FAA established landing minima.

Maximum recommended wind velocity for landing is 50 knots steady and 70 knots peak gusts. Gust velocities and directions are advisory; however, operations with steady wind components at or near 35 knots accompanied by higher gusts require careful evaluation of runway surface conditions and width to ensure the safety of the operation.

- During night operations, when all runway lights (edge, centerline, etc.) are inoperative.

Landing is permitted with partial runway lighting if the CA determines there is adequate lighting to permit a safe landing. In all cases, FAA approved temporary lighting may be substituted for portions of normal lights, provided corresponding minima reductions are applied.

- Greater than light freezing rain at the airport.

The precipitation intensity stated in weather reports (ACARS, AWOS, ASOS, ATIS, or from weather briefer, etc.) or when received from an ATC controller is "moderate" unless it is modified by "light (-)" or "heavy (+)." The exceptions to this are ice crystals and hail. Ice crystals and hail do not receive modifiers. Freezing is a description that is added to further amplify types of weather such as precipitation or obscurations and is defined as:

- When freezing fog is occurring and the temperature is below 0°C.

- When drizzle and/or rain freezes upon impact and forms a glaze on the ground or other exposed objects.

- Known or probable severe icing conditions.

A combination of forecasts, PIREPs, aircraft types, times, locations, and altitudes must be considered. No aircraft will be dispatched, enroute operations continued, or a landing attempted when in the opinion of the CA and/or Dispatcher icing conditions exist or are anticipated which might adversely affect the safety of the flight.

Flights may be dispatched into light to moderate icing conditions only if all deicing equipment for the aircraft is in operable condition.

- Known or probable severe turbulence.

A combination of forecasts, PIREPs, aircraft types, times, locations, and altitudes must be considered.

- Water or slush greater than 1 inch on runway.

Slush is snow mixed with water.

- Wet snow greater than 2 inches on runway.

Snow is considered wet if it can be compacted easily by hand.

- Dry snow greater than 6 inches on runway.

Snow is considered dry if it cannot be compacted easily by hand.

- Braking action reported as "NIL."

Landings will not be attempted if braking action on any portion of the runway is reported "NIL" by air carrier jet aircraft. Friction measuring device values (Tapley or Mu-meter) should be used in conjunction with air carrier jet braking action reports.

If the airport is reporting some taxiway or ramp portions as "NIL," it is acceptable to taxi or be towed on portions that are reported better than "NIL."

- Either thrust reverser is inoperative and the runway is contaminated with clutter or the braking action is less than "GOOD."

Landing is not recommended if the plowed or usable runway width is less than 100 feet.

- New Hire Pilot Landing Restrictions: During an FO's first 100 hours, unless flying with a Check Pilot, FARs require that the CA will Land in the following conditions:

- The FAA designates the airport as a "Special Airport" (indicated by the OPC or *Jeppesen* Special Airport qualification charts).
- Prevailing visibility is at or below 3/4 mile or RVR is at or below 4000 feet.
- Runway has water, snow, slush, or similar conditions that may adversely affect aircraft performance.
- Braking action is reported to be less than "GOOD."
- Crosswind is greater than 15 knots.
- Windshear is reported in the vicinity of the airport.
- Any other condition where the CA deems it necessary to conduct the landing.

Regardless of the FO's experience level, the CA will land under the following conditions:

- An engine is shutdown.

- Visibility is below 3/4 mile or 4000 RVR.

OPC Review for Landing

(PF) Review the OPC for landing performance.

- Confirm that the arrival weight remains within maximum landing limits. Unless required by an emergency situation, do not land in excess of the landing performance limits computed by the OPC.

The OPC will generate landing performance data for an overweight landing and a flashing [OVERWGT] warning will appear on the Landing Output screen. Do not land overweight unless operationally necessary, and then only under the provisions of the Captain's emergency authority.

With a flashing [OVERWGT] for "App Clb" limit, recompute the landing performance using:

- A lesser flap setting,

- A Bleeds-Off configuration

If clutter exists, observe the 20 knot crosswind limit. A clutter condition cannot be entered in the OPC Landing Performance module.

- Evaluate maximum quick turnaround weight for all Flap 15 landings, tailwind landings, and high elevation airports.

If the OPC displays a reverse video "B" next to the runway number, investigate other runways and slower landing speeds to avoid exceeding maximum quick turnaround restrictions.

If the actual landing weight exceeds the maximum quick turnaround weight, then the aircraft must wait a minimum of 62 minutes (**-300/-500**: 53 minutes) at the gate (or parking area) with the parking brake released, or Maintenance must measure the brake temperatures and waive the cooling time. If unable to avoid landing above the maximum quick turnaround weight, call the station early to coordinate brake temperature measurement.

- Select auto brakes, as required.

If the Min(2) stopping margin for the selected runway is less than 500 feet and the runway is not DRY, auto brakes, if operational, will be used. Determine the lowest auto brake level that results in a stopping margin of 500 feet or more (found in the Med(3) or Max(M) column), and then select the corresponding setting (3 or Max) on the auto brake select switch. If neither setting results in a stopping margin of 500 feet or more, landing is still authorized using Max, provided a positive stopping margin is computed.

In all other situations, auto brake use is at the Pilot's discretion. Auto brakes may be beneficial for the following conditions:

- Landing in strong/gusty crosswinds or landing with a condition (such as one engine inoperative or a thrust reverser inoperative) where uniform brake application due to rudder inputs may be affected.

- Landing from a Cat IIIA approach.

- Non-normal landing configurations resulting in higher than normal approach speeds.

If auto brakes are used at the Pilot's discretion, use the lowest auto brake setting that results in a stopping margin of 500 feet or more. With discretionary use of auto brakes, use of level 2 may be an option if the Min(2) stopping margin is 500 feet or more. Auto brake level 1 use is not authorized due to lack of OPC computed stopping margin for this setting.

Note: Auto brake level 2 equates to Min braking, level 3 to Med, and Max to Max.

OPC Inoperative Procedures

If the OPC is inoperative, use any of the following to determine landing data:

- The appropriate performance tables in the "Performance" chapter.

- The Dispatch Release computed landing limitations. The Dispatch Release does not consider crosswind limitations and will not provide "Approx Landing Dist" data.

If the visibility is below 3/4 mile or the RVR is less than 4000 feet, the OpSpec requirement for increased landing field length will be met for a Flaps 30 or Flaps 40 maximum structural weight landing. This is true provided the runway length is 6500 feet or greater, all aircraft systems are operating normally, and no tailwind condition exists. In this case, no further calculations are required to meet the OpSpec requirement.

If a wet runway landing ATOG is shown on the Dispatch Release, this weight may also be used to ensure the low visibility OpSpec requirement is met. Subtract the total flight plan enroute fuel burn from the wet runway landing ATOG. The resulting number is the planned maximum landing weight for the planned runway when the visibility is below 3/4 mile or the RVR is less than 4000 feet.

- Acquire Dispatch-computed landing data via radio or ACARS if the runway available is less than 6500 feet and:

  The Dispatch Release was computed based on a dry landing weight, or

  The aircraft weight exceeds the Dispatch Release planned wet runway landing weight.

  Note: Provide Dispatch with the current ATIS, landing runway, flap setting, and expected landing weight. Dispatch will compute the new wet runway landing weight.

Setting Approach Speeds

Set V_{REF} and V_{TARGET} speeds.

Check the FMC-computed flap V_{REF} and compare it with the OPC-computed speeds. Generally, they should be within 1-2 knots (due to difference between the present weight and predicted landing weight). If they are significantly different, investigate the cause.

Set V_{TARGET}: Set the OPC-computed approach target speed (V_{TARGET}) with the airspeed cursor through the MCP.

Set V_{REF}: To set a corrected V_{REF}, type the desired speed in the scratchpad, then line select the appropriate flap setting reference line. The selected FMC value on the CDU APPROACH REF page generates an "R" for V_{REF} on the MASI airspeed scale. (**-300/-500**) Position an airspeed reference marker (bug) to indicate the OPC-computed V_{REF} speed.

Note: Positioning of additional reference markers (bugs) is at the discretion of the Pilot.

(CA) If an HGS approach is planned or the HGS will be used during descent, setting V_{TARGET} may be delayed until the final flaps are set.

If airframe icing is anticipated, add 10 knots to the final approach airspeed to ensure adequate maneuvering capability. The combined airspeed corrections for steady wind, gusts, and icing should not exceed the 20 knot maximum. When below 300 feet, reduce airspeed to V_{TARGET}.

The OPC will compute the wind corrected V_{TARGET} speed. If the OPC is unavailable, use the following method to compute V_{TARGET}.

If stabilized approach criteria are not met, execute a go-around/missed approach.

(PF) A go-around/missed approach is mandatory from any approach that fails to satisfy stabilized approach criteria.

(PM) It is your duty and responsibility to direct a go-around/missed approach when the stabilized approach conditions are not met. Additionally, any time the Approach or Landing appears unsafe, direct a go-around/missed approach.

Approaches - Required Deviation Callouts

If the sink rate exceeds 2000 fpm between 2000 and 1000 feet above TDZE, call "Sink Rate."

(PM) If any of the following parameters are exceeded after passing 1000 feet above TDZE, make the appropriate callout.

This directive does not limit informative callouts above 1000 feet above TDZE.

Parameter	Limit	Callout
Airspeed	V_{TARGET} minus 5 knots V_{TARGET} plus 10 knots Any time below V_{REF}	**"Airspeed"**
Excessive Sink Rate	1000 fpm when less than 1000 feet above TDZE Significant increase when below 50 feet above TDZE	**"Sink Rate"**
Localizer Displacement	±1 DOT	**"Localizer"**
Glideslope Displacement	±1 DOT	**"Glideslope"**

When making the listed deviation callout, add descriptive words to the callout. For example, 'Airspeed, target plus fifteen' or 'Sink Rate, 1500.'

For situations where there is no ILS glideslope guidance, use the VASI/PAPI/PLASI. Below 1000 feet, the PM will call deviations from the VASI/PAPI/PLASI (Example: 'You're high on the PAPI'). When no glidepath guidance exists, make a callout whenever the approach appears above or below normal glideslope.

Additional callouts are required for HGS AIII approaches.

(PF) Verbally acknowledge the deviation callout and take appropriate corrective action.

The PF will verbally acknowledge all callouts and begin a correction. The PM will allow a reasonable time for the correction to take effect. If the correction is not made or is ineffective, the PM will repeat the callout.

- Threshold
- Threshold markings
- Threshold lights
- Runway end identifier lights
- Visual approach slope indicator
- Touchdown zone or touchdown zone markings
- Touchdown zone lights
- Runway or runway markings (CAT I only)
- Runway lights (CAT I only)

Go-Around/Missed Approach Requirements

Execute a go-around/missed approach if any of the following conditions occur:

- The approach does not meet Stabilized Approach criteria.

- The CDI exceeds a 2-dot deflection while on the FAS in IMC.

- A 2-dot low glideslope deflection on the FAS in IMC is exceeded.

- The ADF bearing pointer exceeds 10 degrees from desired course on an NDB approach inside the FAF in IMC.

- Sufficient visual references for landing are not present and either of the following occurs:

  - (ILS) Radio Altitude display flashes and turns amber (**-300/-500**: Radio Altitude Decision Height light illuminates), or
  - (ILS) The aircraft altimeter indicates that the published DA (precision approach) is reached, or
  - (NP) The MAP (non-precision approach) is reached.

- The Pilot initially has sufficient visual references but then loses them below DA or MDA.

- The Pilot determines that a landing in the touchdown zone cannot be safely accomplished because:

  - The required descent or maneuvering will exceed the stabilized approach criteria, or
  - The aircraft will touch down beyond 1500 feet with an insufficient OPC computed stopping margin.

- Before reaching DA, any required portion of ground equipment/system elements become inoperative, unless adequate and appropriate backup exists for the type of approach being flown.

- An HGS malfunction occurs during an HGS approach and adequate runway visual references have not been established.

- An APCH WARN or HGS FAIL occurs and the CA does not have the runway in sight. “Runway in sight” means the actual runway is in sight, not just part of the runway environment, such as lead-in lights or other approach lights.

- Either Pilot directs a go-around.

- ATC directs a go-around.

Stage	CA	FO
If Landing	If the PM, make callouts on radio altimeter at discretion. At 100 feet, call, **"100."** At 50 feet, call, **"50."** At 30 feet, call, **"30."** At 10 feet, call, **"10."**	If the PM, continue callouts on radio altimeter. At 100 feet, call, **"100."** At 50 feet, call, **"50."** At 30 feet, call, **"30."** At 10 feet, call, **"10."** Maintain instrument orientation until slowed for taxi speed.

If the **"1000 feet"** callout is missed, call the current altitude. For example, the call might be "900 feet, airspeed 135, sink rate 800." If any of the remaining altitude callouts are missed, skip them and call the next required altitude. For example, if **"500"** is missed, the next callout would be **"400."**

HGS ILS Approach Profile

For any HGS ILS approach, the procedures are essentially identical to an ILS approach. The CA will manually fly the aircraft using HGS guidance. The FO will monitor the approach using standard flight instruments. The AIII mode generates an expanded navigation instrument display mode.

Prior to executing an HGS ILS approach using the AIII mode, the following must be accomplished:

Refer to "HGS Approach" on the Performance card or Checklist card.

- Instrument Transfer switches - NORMAL

(**-300/-500**) VHF NAV transfer switch may be in either CAPT ON AUX or F/O ON AUX position.

- Localizer Frequencies - Both NAV Radios Set

The FO may delay setting the localizer frequency until the FAS if a VOR is required.

- Localizer Courses - Both MCP Courses Set

The FO may delay setting the localizer course until the FAS if a cross radial is required.

- HCP - Desired Mode, Runway Length, TDZE, Glideslope Angle - Set

These are normally set Before Top of Descent. Enter the Runway Length from the OPC Landing Output screen (runway usable length beyond threshold). For a planned AIII approach, the Primary (PRI) mode is recommended because it will flash AIII as a reminder to select the AIII mode.

(HGS 4000) The AIII mode can be armed for automatic capture (AIII ARM) by pushing the STBY mode key on the HCP when AIII is displayed on the right side of the standby line.

- Flight Directors - Both ON

- MCP Approach Mode - Set

- MCP Target Speed - Set

The CA may delay setting V_{TARGET} until the final flaps are set.

(CA) Slow and configure the aircraft as described in the normal ILS profile. For an AIII approach, when available call for the AIII mode.

(CA) Disengage the autopilot no later than the GSIA or glideslope intercept, whichever occurs last.

(CA) Use HGS guidance to fly the FAS.

Aircraft flight instruments may be used to assist aircraft maneuvering prior to final course capture. Once established on the FAS, use HGS guidance.

(FO) Monitor ILS raw data, engine instruments, warnings, and the CA's flight performance.

Inform the CA if any conditions that compromise the approach are detected (examples: equipment failures, configuration errors, and approach deviations).

When using AIII approach mode, by 500 feet above TDZE, place the left hand at the base of the thrust lever quadrant and the right hand by the yoke to prepare for a possible go-around/missed approach.

(FO) If the APCH WARN or HGS FAIL light illuminates, call, "Approach Warning, Go-around" or "HGS Fail, Go-around."

The Approach Warning or HGS Fail is available only in the AIII mode and below 500 feet AGL.

(CA) If APCH WARN or HGS FAIL occurs prior to reaching minimums with the runway in sight, continue the approach by calling, "Landing." "Runway in sight" means the actual runway is in sight, not just part of the runway environment, such as lead-in lights or other approach lights.

(CA) At DA, make a decision to land or execute a missed approach.

- If landing, move the thrust levers to idle when the IDLE command appears on the combiner (AIII mode only).

- Execute a go-around/missed approach for the following:

  - Insufficient visual references available for Landing.

  - Aircraft is not in a position that will allow a landing in the desired touchdown zone.

- Bank angle greater than 8 degrees (outside of HGS bank warning bracket limits).

- Aircraft will not land and/or remain within 30 feet of the runway centerline.

(FO) Continue monitoring the instruments until either:

- Slowed to taxi speed after landing

- 500 feet AGL on a go-around/missed approach

HGS ILS Company Procedures, Crew Coordination, and Callouts

Use the same callouts from the ILS approach profile down to 1000 feet above TDZE. Following are specific HGS callouts and procedures from 1000 feet to 10 feet.

Stage	CA	FO
1000 feet above TDZE	Call, **"1000 feet, Airspeed ____, Sink Rate _____."**	Call, **"1000 feet, _____mode."** Identify the HCP mode selected.
On Approach	Follow the HGS flight path symbol and guidance cue references.	Monitor the desired airspeed, HGS tracking, and instrument displays. When using AIII approach mode, by 500 feet above TDZE, place hands near thrust levers and yoke. Call the following altitudes above TDZE: At 500 feet call, **"500."** At 400 feet call, **"400."** At 300 feet call, **"300."** (CAT II/IIIA) At 200 feet call, **"200."** (CAT IIIA)

If the **"1000 feet"** callout is missed, call the current altitude. For example, the call might be "900 feet, airspeed 135, sink rate 800." If any of the remaining altitude callouts are missed, skip them and call the next required altitude. For example, if **"500"** is missed, the next callout would be **"400."**

Stage	CA	FO
100 Feet Above DA. For a CAT IIIA, use the radio altimeter (unless the chart directs use of the barometric altimeter)	Call, **"Going outside."** Direct your primary attention outside to obtain sufficient runway visual references.	Call, **"Approaching minimums."** (FO) Note: If the CA fails to respond to the **"Approaching Minimums"** call, repeat the callout. If the CA fails to respond again, announce, **"I have the aircraft"** and execute a go-around/missed approach.
At Decision Altitude	If you intend to land, call, **"Landing."** If a missed approach is required, call, **"Go-around thrust."**	Call, **"Minimums."** Continue to monitor ILS tracking and instrument displays. Make the altitude callouts. If the CA fails to respond following, **"Minimums,"** assume incapacitation. Call, **"I have the aircraft."** For approaches planned to CAT IIIA minimums the FO must execute a go-around. Respond, **"Go-around thrust."** Assist with the go-around/missed approach, as directed.
If Landing		Continue callouts on radio altimeter. At 100 feet, call, **"100."** (N/A: CAT II/IIIA) At 50 feet, call, **"50."** (N/A: CAT IIIA) At 30 feet, call, **"30."** At 10 feet, call, **"10."** Maintain instrument orientation until slowed to taxi speed.

Deviation Callouts for Approaches Using the AIII Mode

For HGS approaches requiring the AIII mode, from 500 feet above TDZE to touchdown, the FO will monitor the following parameters in addition to the standard procedures. If any of the following parameter limits are exceeded, the FO will make the corresponding callout.

HGS AIII Mode Parameter	Limit	Callout
Airspeed	Target speed ± 5 knots (down to flare initiation)	**"Airspeed"**
Localizer	±1 DOT on the expanded ADI display (down to touchdown)	**"Localizer"**
Glideslope	± 1 DOT (down to 100 feet)	**"Glideslope"**
Sink Rate	1000 fpm (down to 50 feet)	**"Sink Rate"**
APCH WARN		**"Approach Warning, Go-around"**
HGS FAIL (**HGS 4000**)		**"HGS Fail, Go-around"**

Note: (**-300/-500**: N/A) Both the CA and FO ILS Localizers change to the expanded display any time an ILS Localizer is engaged (deviation approximately 1/2 dot or less) and the aircraft is below approximately 1500 feet AGL. This expanded display is indicated when the 5-symbol localizer scale display changes to a 3-symbol display.

Note: (**-300/-500**) An expanded ADI ILS Localizer display and ADI EXP LOC annunciator light are available on the FO's instrument panel when the AIII mode is active.

- The maximum tailwind is 10 knots (unless the braking action is reported as 'POOR' or less.)

HGS Approaches - Operational Requirements

The HGS is required for ILS Approaches with visibility below 1/2 mile or 1800 RVR (or to 1/2 and 1800 RVR if Special CAT I is published on the approach chart as 'HGS AIII MODE ONLY').

Satisfy the following operational requirements for all HGS approaches below CAT I minimums (including Special CAT I):

- The CA must be HGS trained, qualified, current, and have 300 hours SWA PIC.

See "Topical Information: Aircraft/Aircrew Procedures: HGS Currency" for additional information.

- The FO must be HGS trained.

- CAT III approaches require a 'SOUTHWEST HGS ONLY' tailored approach plate.

- CAT II procedures and minimums are authorized for SWA crews even if a chart is not tailored for Southwest Airlines. As a minimum, the Jeppesen approach chart must have a decision altitude (DA) listed. Charts that only list an Alert Height (AH) are not acceptable.

- Fly a Flaps 30 or 40 Approach and Landing.

- The CA must hand-fly the approach using HGS display guidance.

- The maximum headwind is 25 knots.

- The maximum crosswind is 10 knots.

- The maximum tailwind is 10 knots (unless the braking action is reported as 'POOR' or less.)

- To determine the DA below CAT I, use the radio altimeter as the primary instrument (unless otherwise noted on the approach chart).

- When a CAT II approach chart shows the restriction, 'RA NOT AUTH,' you must have an operable inner marker to use the 100-foot DA. The DA is determined by the inner marker or the barometric altimeter, whichever is reached first.

- The AIII Mode must be used for an approach to Special CAT I, Special CAT II, or CAT IIIA minimums. Select AIII whenever it becomes available.

Flight Dispatch

Southwest Airlines is a domestic air carrier operating under the Federal Aviation Regulations (FAR), Part 121, applicable to domestic air carriers.

Dispatch (OpSpec)

Dispatch exercises operational control over all flight operations. Southwest Airlines uses a dispatch system located in Dallas, Texas. Procedures and responsibilities are described in the *Flight Operations Manual*, *Flight Reference Manual*, and their addendums.

Aircraft Airworthiness and Equipment

No person may dispatch or release an aircraft unless it is airworthy and is equipped as prescribed in FAR Part 121.

Areas of Operation (OpSpec)

Authorization to Conduct Flights (OpSpec)

- All enroute operations are in accordance with Instrument Flight Rules.
- Pilots can fly enroute anywhere within the contiguous 48 states and the District of Columbia using the following:
  - ATC radar vectors in controlled airspace
  - Airways in controlled airspace
  - ATC authorized RNAV routing (when aircraft equipped with operational LNAV)
  - Direct routing between NAV aids in controlled airspace within the operational service volume of the NAV aids

  Note: Under ATC control, revenue flights through Canadian and Mexican airspace are authorized provided a landing is not made in Canada or Mexico.

Controlled and Uncontrolled Airspace Use (OpSpec)

Operations in controlled airspace may include Class A, B, C, D, and E Airspace.

Operations may be conducted outside controlled airspace, the shaded areas on the Low Altitude Charts, using the following criteria:

- Stay within the operational service volume of the NAV aids used for navigation.
- Be able to reliably fix your position every hour. A reliable fix is station passage of a NAV aid, VOR/DME fix, NDB/DME fix, VOR intersection, NDB intersection, or VOR/ NDB intersection.

Dispatch Office

The dispatch office will coordinate, release, and maintain a safety watch for all Southwest Airlines flights. This office will be responsible for adherence to all applicable Federal Aviation Regulations and Southwest Airlines policies and will keep the Captain fully advised of all information pertinent to the safety and completion of the flight.

Dispatching Authority

No person may start a flight unless an aircraft Dispatcher specifically authorizes that flight.

Dispatch Flight Assignments

Flights are assigned to individual Dispatch Desks based on city pairs. The desk number and telephone extension are designated on the Release.

Duties and Responsibilities

Each Captain and Dispatcher are jointly responsible for the safe, efficient planning and operation of all flights. If either the Captain or Dispatcher decides that the flight cannot be operated safely, the flight will be delayed, rerouted, or cancelled.

Dispatcher Information to Pilot-in-Command

The Dispatcher will provide the pilot-in-command all available current reports or information on airport conditions and irregularities of navigation facilities that may affect the safety of the flight.

Prior to dispatching and operating a flight, the Captain and Dispatcher will become familiar with all available information and independently analyze the flight on the basis of the following factors:

- Reported weather conditions enroute and at terminals including:
  - Clear air turbulence
  - Thunderstorms
  - Low altitude windshear
  - Any other adverse weather reports or trends
  - Winds aloft
  - Alternate conditions
- Pilot reports of conditions along the planned route
- Communication and navigational facilities
- NOTAMs and field conditions for regular and alternate airports

The Dispatcher will

- monitor the progress of each flight,
- issue necessary information for the safety of the flight, and
- cancel or re-dispatch a flight if, in their opinion or the opinion of the Captain, the flight cannot operate or continue to operate safely as planned or released.

Captain's Documentation

It will be the Captain's responsibility, when being dispatched via telephone, radio, or other electronic means, to assure the Release is copied in its entirety. A copy of all Dispatch Releases will be retained with the aircraft papers until the flight or sequence of flights contained in the Release have terminated. Aircraft papers are defined as the following:

- Loading Schedule
- Weather information
- NOTAMs
- Dispatch Release
- Flight plan

The Dispatch Release

A Dispatch Release constitutes an authorization to operate a flight. The Dispatch Release will be signed by the Captain at the originating station specified in the Release. The Captain's signature along with the Dispatcher's printed name on the Release constitutes a legal release as required by FAR Part 121. The Dispatcher may delegate authority to sign a Dispatch Release for a particular flight, but may not delegate the authority to dispatch.

The takeoff, landing, and enroute weights listed on the Dispatch Release are predicated on the most likely departure runway, arrival runway, and the one engine inoperative criteria along the filed route. The release ATOG may not be exceeded; however, any runway may be used provided the actual aircraft weight and performance calculations computed by the Onboard Performance Computer (OPC) do not exceed the Dispatch Release ATOG.

Release Content

The Dispatch Release may be in any form, but will contain at least the following information concerning each flight:

- Identification number of the aircraft
- Flight number
- Departure airport, destination airports, and alternate airports
- A statement of the type of operation (e.g., IFR)
- Minimum fuel required
- Maximum allowable takeoff gross weight (not required by FAR)
- Dispatcher's name and date

The Dispatch Release must contain, or have attached to it, weather reports, available weather forecasts, or a combination thereof for the destination airport and alternate airports that are the latest available at the time the Release is signed by the Captain and Dispatcher. The Release may include any additional available reports that the Captain or Dispatcher consider necessary or desirable.

Dispatch Releases that are not generated by the normal computerized process will be valid if they contain the above elements.

Release example: See the appendix.

Dispatch Release Security

Each Dispatcher will log on to SWIFT using a personal password. Use of a password belonging to anyone other than one's self is prohibited.

If a station is missing a previously transmitted Dispatch Release and the Dispatcher responsible is unavailable, another Dispatcher may re-send the Release as is.

If the missing Dispatch Release has been calculated but has not been sent, do not assume the Dispatch Release is ready for transmission. In this case, another Dispatcher may assume operational control of the flight and issue the Dispatch Release using their name. Revisions or verbal amendments will be handled in the same manner. Once the original Dispatcher becomes available, operational control of the affected flight(s) reverts to them after being properly briefed by the operational control Dispatcher.

Flight Numbering System

All aircraft movements will be dispatched utilizing the following numbering system:

RANGE	FLIGHT TYPE/NUMBERING METHOD	REMARKS	
0001–3999 ***4000–4999 (code share)*** 5000–6999	Scheduled Flight Numbers/Assigned by Schedule Planning	IFR	...
7000–7999	DOD Charters/Sequential, Repeating Annually	IFR	...
8000–8499	Commercial Charters/Sequential, Repeating Daily	IFR	...
8500–8549	Position Ferries/Sequential, Repeating Daily	IFR	...
8550–8699	Charter Ferries / Sequential, Repeating Daily	IFR	...
8700–8724	Maintenance Ferries / Sequential, Repeating Daily	IFR	...
8725–8749	Promotional/Sequential, Repeating Daily	IFR	...
8750–8774	Maintenance Checks/Sequential, Repeating Daily	...	ATC
8775–8799	Pilot Training/Sequential, Repeating Daily	...	ATC
8800–8949*	True Extra Sections/Sequential, Repeating Daily	IFR	...
8950–8999	Operational Extra Sections (Turn-Backs, Diverts, Flagstops)/Sequential, Repeating Daily	IFR	...
9000–9999	Stub-Originations/6000 + Original Number	IFR	...

*Must exclude flight number 8888.

The remarks column denotes various statements that will automatically be incorporated on to the Release when the appropriate flight number is assigned:

- A statement of operation designated by IFR.
- Default ATC Flight plan filing remarks. Note that Maintenance Check, Pilot Training flights, Maintenance ferries, and new aircraft deliveries are Part 91 and not Part 121 operations. The ATC designation signifies that the default ATC flight plan remarks for these types of flights will automatically be annotated to show TESTHOP or TRAINER as appropriate.

Airport Over-fly

A flight may not be dispatched to an airport that is closed. However, a flight may be dispatched to another regular Southwest airport and may be routed to over-fly the closed airport provided the following:

1. The flight is planned in accordance with applicable Federal Regulations and Company policies.
2. The Dispatcher coordinates the "over-fly" with both the Captain and Dispatch Superintendent.
3. ATC initiatives do not exist at the closed airport.

The Dispatcher may plan an enroute hold, provided the location, altitude, and duration of the hold are coordinated with both Captain and the ATC Center authorizing the hold prior to departure and, while holding enroute, sufficient fuel remains onboard to reach the destination listed in the original dispatch release, thereafter to fly to and land at the most distant alternate airport (where required) for the airport to which dispatched and to fly for 45 minutes at normal cruising fuel consumption.

If, while enroute, the closed airport subsequently reopens, the Dispatcher may change the original destination while enroute provided the Dispatcher complies with all applicable Federal Regulations, Company policies, and aircraft limitations.

Duration of Dispatch Release

The Dispatch Release expires when the aircraft lands.

Air Interruption

An air interruption is defined as any situation in which the aircraft gets airborne but does not proceed to the planned destination or alternate. The Dispatch Release expires upon landing from an air interruption.

After being advised of an air interruption, the Dispatcher will contact the Captain and confirm whether the actual landing weight of the aircraft exceeded the maximum landing weight. See "Normal Operations: Additional Landing Considerations and Procedures" for overweight landing information.

Dispatch Release Amendments

- Prior to pushback, the Release may be amended twice. A single amendment may contain more than one change. If additional amendments are necessary, a new Release will be issued.
- After pushback, the Release may be amended as many times as necessary; however, amendments should be made primarily by ACARS or, if ACARS is unavailable, by radio only.
- All amendments must be copied precisely by the Captain and the Dispatcher.
- All changes must be annotated on the Captain, Operations Agent, and Dispatcher copies of the Release and must include the time of change and the initials of the Dispatcher.

  Note: After the aircraft has left the gate, if the Release is amended, it is not necessary for the changes to be annotated on the Operations Agent's copy.
- Dispatch Release amendments can be made with respect to UTC or central time.
- When a Dispatch Release revision is issued, the Dispatcher will add a brief summary of the changes in the remarks section of the revised Release.

Enroute Change of Destination or Amendment of Alternates

The destination airport in the original Dispatch Release may be changed enroute provided enough fuel remains to fly to the intended destination, the most distant alternate, if required, and thereafter for 45 minutes at normal cruise.

The alternate listed on the Release may be amended provided that sufficient fuel remains for the aircraft to proceed to the intended destination airport, continue to the alternate, and fly thereafter for 45 minutes at normal cruise.

When necessary to change the destination or alternate on the original Dispatch Release, the Captain and Dispatcher must do the following:

- Consider the weather and forecast along the intended route of flight.
- Consider any adverse conditions such as thunderstorms, turbulence, low level wind shear (LLWS), and any anticipated traffic delays.
- Determine that the current weather reports and forecast at the destination airport will be at or above the authorized landing minimums at the estimated time of arrival at the destination airport.
- Determine that the weather forecast at the alternate airport at the estimated time of arrival is forecasted to be at or above authorized alternate minimums.

The Dispatcher must provide the Flightcrew with all available current information on airport conditions and irregularities of navigation facilities that may affect the safety of the flight and ensure that Dispatch landing performance (OPC) will not be exceeded.

Verbal Dispatch Release

- A verbal Release must be copied precisely by the Captain and must contain the time and the initials of the Dispatcher.
- When a verbal Release is issued, the Dispatcher will prepare a release message to be filed and record the time the Release was given to the Captain.
- A record of all forecasts and special weather reports given to the Captain will be made by the Dispatcher and kept on file.

Disposition of Loading Schedule, Dispatch Release, and Flight Plans

Dispatch will plan to send each Release to the originating station approximately one hour prior to the estimated departure time but no later than 30 minutes prior to departure.

Dispatch will retain copies of all Releases sent for a period of three months.

General Considerations

Weather Information Required

When Southwest operates at an airport where the control tower is closed and no automated weather reporting system is available, weather observations must be provided by certified weather observers.

A continuing watch over weather conditions must be maintained wherever Part 121 terminal operations are conducted. For surface observations to be considered "current," one of the following two conditions must be met:

- A specifically approved automated weather observation system must be fully operational while terminal area flight operations are conducted.
- An observer station of appropriate type such as an ASOS, a supplemental/limited aviation weather reporting station (SAWRS/LAWRS); trained Company observers, contracted observers, or some ATC personnel) must be fully operational and must maintain a basic weather watch as follows:

  For scheduled operations, a basic weather watch must begin in time to make an observation available to Dispatchers and Pilots at least 30 minutes before the estimated time of arrival or departure. The basic weather watch may not be discontinued until the arrival or departure is completed. The same requirements exist for non-scheduled operations for Southwest Airlines.

ACARS Notification

An aural chime, call light, or scratch pad message (as described in the table below) will serve as the notification to the Flightcrew that a new message has been received.

Sterile Cockpit	MCDU Usage	Call Light	Chime	Scratchpad
Yes	Both in ACARS	No	No	Yes
	Neither in ACARS	Yes	No	No
	Mixed	On MCDU not in ACARS	No	On MCDU in ACARS
No	Both in ACARS	No	Yes	Yes
	Neither in ACARS	Yes	Yes	No
	Mixed	On MCDU not in ACARS	Yes	On MCDU in ACARS

ACARS Problem Reporting

The ACARS system is a complex pipeline that consists of many different subsystems. Because of this, failure of the system does not necessarily indicate a failure of aircraft hardware. If you believe the system is not functioning properly, contact Dispatch via voice radio or telephone and report the problem. The Dispatcher will check on the system and inform the Pilot whether the ACARS system is operative or inoperative.

Note: Short term, single "NO COMM" events are expected and need not be reported.

ACARS Messages

Uplink Messages

Uplink messages are defined as any messages originating on the ground. Uplinked messages are accessed in the NEW MSGS log. After viewing an uplinked message, it will be stored in the RCVD MSGS log until deletion.

DISPATCH MSG: Dispatch Freetext Uplink to Flightcrew
Sent by Dispatch to the Flightcrew. This message may contain any information deemed appropriate by the Dispatcher.

VOX CONTACT: Dispatch Voice Contact Request to Flightcrew
Sent by Dispatch to the Flightcrew. The Pilot should contact Dispatch on the frequency noted in the message.

DIVERSION PLAN: Dispatch Diversion Plan to Flightcrew
Sent by Dispatch to the Flightcrew. The Captain will either accept or reject the Diversion Plan. If the Diversion Plan is accepted, all changes must be annotated on the written Release. If the Diversion Plan is rejected, the Captain will use the Diversion Plan Reject page to send the reason for the rejection. The Dispatcher will then send a new Diversion Plan to be considered.

Dispatch Weather Report to Flightcrew
Automatic response to a WEATHER REQUEST. Dispatch has access to the same weather information.

Field Condition Response
Automatic response to a Field Condition Request. A Field Condition Response returns a station's latest Field Condition Report, which lists ramp, runway, and taxiway information. Dispatch has access to the same Field Condition information.

Downlink Messages

Downlink messages are defined as any message originating from the aircraft. The following downlink messages may be initiated by the Flightcrew or automatically initiated by the aircraft.

FREE TEXT: Flightcrew Free Text to Dispatch
Sent by the Flightcrew to the Dispatcher. This message may contain any information deemed appropriate by the Flightcrew.

VOX CONTACT: Flightcrew Voice Contact Request to Dispatch
Sent by the Flightcrew to the Dispatcher. This message is a request for the Dispatcher to contact the Flightcrew on company frequency.

Enter the 3-letter identifier for the desired company station and then press send. After this message is sent, tune the VHF #2 radio to the desired company station frequency and monitor. Dispatch will contact the Flightcrew using the company frequency for this station.

DIVERSION PLAN: ACCEPT
Sent by the Captain to Dispatch. This message is sent to accept the proposed Diversion Plan.

All changes in the Diversion Plan must be annotated on the written Release.

DIVERSION PLAN: REJECT
Sent by the Captain to Dispatch.

This will access the Diversion Plan Reject page. Use the free text prompts to enter the reason for the rejection and then press SEND. The Dispatcher will then send a new Diversion Plan to be considered.

DIVERSION RPT: Flightcrew Diversion Report to Dispatch

Sent by the Flightcrew to the Dispatcher. This message is used to notify Dispatch that the flight is diverting to an alternate airport.

Enter the 3-letter airport identifier, ETA, estimated arrival fuel, and appropriate free text remarks. Press SEND.

A Diversion Report will be sent to Dispatch when time permits. Circumstances may arise when a Diversion Plan is not received prior to a diversion and the sending of a Diversion Report.

REROUTE RPT: Flightcrew Re-Route Report to Dispatch

Sent by the Flightcrew to the Dispatcher. This message is used to notify Dispatch that ATC has assigned a routing that is significantly different than the filed Flight Plan.

Enter the new routing, select reason, ETA, estimated arrival fuel and appropriate free text remarks. Press SEND.

HOLDING REPORT: Flightcrew Holding Report to Dispatch

Sent by the Flightcrew to the Dispatcher, Crew Scheduler, and Ground Ops when the aircraft enters a holding pattern.

Enter the holding fix, altitude, EFC, and appropriate free text remarks. Press SEND.

ADVISORY RPT: Flightcrew Advisory Report to Dispatch

Sent by the Flightcrew to the Dispatcher. This message is used to advise Dispatch of position and required advisory information.

Enter location and any appropriate free text remarks. Press SEND.

WEATHER REQUEST: Flightcrew Weather Request to Dispatch
Sent by the Flightcrew. This message is used to request one or more weather products.

Enter a 3-letter airport code and select one or more of the appropriate product(s).

If D-ATIS is not available, a "NOT PARTICIPATING" message will be sent. SIGMETS require selection of EAST, CENTRAL, or WEST.

Field Condition Request
Sent by the Flightcrew to request that a station's latest Field Condition Report be sent to the aircraft.

Select FIELD on the WEATHER REQUEST page to send a Field Condition Request.

FIELD CONDITIONS: Pilot Field Condition Report
Sent by the Flightcrew to report ramp, runway, and/or taxiway conditions. OTIS and SWIFT are automatically updated with this information.

The Pilot Field Condition Report should be sent at a Dispatcher's request or when actual conditions differ from the conditions listed on the Dispatch Release.

Note: Submitting a Pilot Field Condition Report does not relieve a Flightcrew of their responsibility for notifying ATC when braking action is less than good. See "Normal Operations: Additional Landing Procedures & Considerations" for additional information.

TAXI DELAY: Taxi Out Delay Report
Sent by the Flightcrew to the Dispatcher, Crew Scheduler, and Ground Ops if the flight is delayed between pushing the gate and takeoff.

The CMU posts TAXI REMINDER messages for the Flightcrew when a Taxi Out Delay Report is needed:

1. An initial reminder is posted 20 minutes after push if the report has not been sent and the brakes are set.
2. Subsequent reminders are posted at each updated ETD + 10 minutes.

Crew Carryon Baggage

Pilots working a flight or traveling on Nonrevenue Must Ride passes will abide by the following:

- Pilots actually working the flight will stow all baggage in the cockpit. Baggage stowed in the cockpit will be positioned to prevent interference with crew duties and secured in such a fashion that it will not present a hazard in emergency situations.
- Deadheading Pilots on Nonrevenue Must Ride passes will:
  - Preboard and place one bag under the seat directly in front of them and place one bag in the overhead bin.
  - If all under seat locations are used, Pilots may use any overhead bin space remaining, provided the bag is carefully stowed so as to not present a hazard.

Note: Crewmembers as well as passengers may carry one self-defense spray, not exceeding 4 fluid ounces by volume, that incorporates a positive means to prevent accidental discharge, in checked baggage and loaded in the cargo bin.

Crewmembers at Controls

- Crewmembers on flightdeck duty shall remain at their stations while the aircraft is taking off or landing, and while it is enroute, unless the absence of one crewmember is necessary for the performance of duties in connection with the operation of the aircraft, or in connection with physiological needs.
- Both Pilots will have their seats and rudder pedals properly adjusted prior to takeoff and prior to final approach so that either may be prepared to immediately assume full control of the aircraft.
- During takeoff and prior to final approach, the Pilot monitoring should have feet and hands in a position to immediately assume full control of the aircraft if circumstances warrant.
- During aircraft operation with the autopilot engaged, both Pilots will maintain their seat properly adjusted for normal manual manipulation of the controls.
- At lower altitudes, while the aircraft is operating with the autopilot engaged, the Pilot flying should have their hands and feet guarding the controls.

  Note: "At lower altitudes" should be interpreted to include the first few minutes of flight with the autopilot engaged after takeoff and any time the flaps are extended for maneuvering, approach, or landing.
- Crewmembers will keep their seatbelts fastened when at their station and will wear the shoulder harnesses for all takeoffs and landings.

Dispatch Responsibilities

Internal Dispatch Communications and Responsibilities

- The SOD is responsible for all coordination of flight movements, cancellations, diversions, equipment routings, crew reassignments, or such other necessary duties as they affect the different sectors within the Dispatch Office.
- The Dispatcher shall be aware of, and advise the SOD of, any existing or anticipated operational situations within their area of responsibility that may adversely affect routine operations, such as restrictive MEL deferrals, deteriorating weather, and/or higher than normal landing minima. This information should also be disseminated to all other Dispatchers.
- The Dispatcher will determine all operational requirements for flights assigned to their sector of responsibility, including but not limited to runway and airport conditions at arrival and departure airports, alternate selection and use, enroute weather deviation fuel, and contingency fuel requirements. The releasing Dispatcher, or the relieving Dispatcher, is responsible for issuing any amendments to the original Dispatch Release.
- Air-interruptions, diversion or any deviation from the destination specified in the original Release to another airport are the responsibility of the Dispatcher originally releasing the flight or the relieving Dispatcher.
- On-line charters and on-line ferry flights will be released consistent with the desk responsible for operational control as shown in DISPATCH FLIGHT ASSIGNMENTS above. All off-line charters and off-line ferries or flights between cities not listed in DISPATCH FLIGHT ASSIGNMENTS will be assigned by the SOD via SWIFT consistent with the work load and operational conditions existing in the Dispatch Office.
- A Weather Advisory Message (WAM) should be issued any time the Dispatcher or SOD has a reasonable expectation (based on METARs, TAFs, PIREPs, or other indications) that the ability to operate into a particular airport is (or will be) doubtful. In the event the SOD and Dispatcher disagree whether a WAM should be issued, the SOD is ultimately responsible for the determination.

Dispatcher Duty Time Limitations

The Dispatcher shall remain on duty until relieved by the next scheduled Dispatcher.

Southwest Airlines will not schedule a Dispatcher for more than ten (10) consecutive hours of duty except in cases where circumstances or emergency conditions require otherwise.

If a Dispatcher is scheduled for more than ten (10) hours of duty in twenty four (24) hours consecutive hours, they shall be provided at least eight (8) hours of rest at or before the end of ten (10) hours of duty.

Advisory Information

Stop Margins

These charts provide approximate stop margins based on minimum (MIN), medium (MED), and maximum (MAX) braking effort on a DRY runway in addition to the maximum braking distance for a WET runway with FAIR braking action reported. These distances include an air distance of 1500 feet from 50 feet over the runway threshold to touchdown.

Non-normal Configuration Stop Margins

Information is provided to support non-normal configurations that affect landing performance of the airplane. Add the weight correction shown to the actual weight and enter the required chart with the corrected weight to obtain approximate stop margins.

Brake Cooling Schedule

Advisory information is provided to assist in avoiding problems associated with hot brakes. Application of the cooling procedures shown will avoid brake overheat and fuse plug problems that could result from a rejected takeoff. This advisory information is based on maximum braking. Consideration is required for all rejected takeoffs and for all landings for which the maximum quick turn weight has been exceeded. For landings, use the greater of the maximum quick turn time or the brake cooling schedule time.

To determine the recommended cooling time, correct the speed at which the brakes are first applied by adding one half of the headwind component, or 1.5 times the tailwind component. Enter the Reference Brake Energy chart at the pressure altitude, OAT, and aircraft weight using the corrected brakes on speed to determine the reference brake energy. Enter the Corrected Brake Energy Per Brake chart with reference brake energy to determine either the RTO or landing brake energy level. Finally, enter the Cooling Time chart with the corrected brake energy to determine the recommended parked cooling time.

Advisory Information

Landing Distance (0 to 2000 feet pressure altitude)

Flaps 15								
Landing Weight (1000 lb)	Wind							
	0 Knots				10 Knots Tailwind			
	MIN	MED	MAX	WET	MIN	MED	MAX	WET
190	10650	8080	5930	7740	11990	9020	6970	9070
180	10170	7750	5710	7390	11470	8660	6710	8640
170	9670	7400	5390	6970	10940	8290	6010	8170
160	9250	7100	5130	6620	10480	7970	5680	7770
150	8780	6790	4860	5780	9980	7630	5360	6510
140	8310	6460	4670	5520	9460	7280	5150	6230
130	7810	6110	4460	5250	8920	6900	4930	5930
125	7560	5940	4350	5110	8650	6710	4820	5790
120	7320	5770	4250	4980	8380	6530	4710	5640
115	7070	5590	4150	4850	8120	6340	4600	5500
110	6820	5420	4040	4720	7850	6160	4480	5350
105	6580	5250	3940	4580	7580	5970	4370	5210
100	6330	5080	3840	4450	7300	5780	4260	5060
95	6080	4910	3730	4320	7030	5590	4150	4920

Flaps 30								
Landing Weight (1000 lb)	Wind							
	0 Knots				10 Knots Tailwind			
	MIN	MED	MAX	WET	MIN	MED	MAX	WET
150	8280	6440	4650	5580	9430	7250	5140	6300
140	7840	6130	4470	5340	8950	6920	4940	6040
130	7370	5800	4270	5080	8450	6570	4730	5750
125	7150	5640	4180	4950	8200	6390	4630	5610
120	6920	5480	4080	4820	7950	6220	4520	5480
115	6690	5320	3980	4690	7700	6050	4420	5340
110	6460	5160	3890	4570	7450	5870	4320	5200
105	6230	5000	3790	4440	7200	5700	4210	5060
100	6000	4840	3690	4320	6950	5520	4110	4920
95	5770	4680	3600	4190	6700	5350	4000	4780

Flaps 40								
Landing Weight (1000 lb)	Wind							
	0 Knots				10 Knots Tailwind			
	MIN	MED	MAX	WET	MIN	MED	MAX	WET
150	8010	6240	4540	5500	9140	7040	5020	6220
140	7590	5940	4360	5250	8680	6720	4820	5950
130	7140	5620	4170	5000	8190	6370	4620	5670
125	6920	5470	4070	4870	7950	6210	4520	5530
120	6700	5320	3980	4750	7720	6040	4420	5400
115	6480	5170	3890	4620	7480	5880	4320	5260
110	6270	5010	3800	4500	7240	5710	4220	5120
105	6050	4860	3700	4370	7000	5540	4120	4990
100	5830	4710	3610	4250	6760	5370	4010	4850
95	5610	4550	3520	4130	6520	5200	3910	4720

Landing Distance (2001 to 4000 feet pressure altitude)

Flaps 15

Landing Weight (1000 lb)	Wind							
	0 Knots				10 Knots Tailwind			
	MIN	MED	MAX	WET	MIN	MED	MAX	WET
190	11380	8600	6390	8400	12770	9570	7710	9830
180	10860	8240	6140	8000	12210	9180	7400	9340
170	10330	7860	5680	7540	11640	8780	6500	8820
160	9870	7540	5400	7140	11140	8440	5970	8370
150	9360	7190	5100	6100	10600	8070	5620	6860
140	8850	6840	4890	5810	10040	7680	5390	6550
130	8300	6450	4660	5510	9450	7270	5150	6220
125	8030	6270	4550	5370	9160	7070	5030	6070
120	7770	6080	4440	5230	8880	6870	4910	5910
115	7500	5900	4330	5080	8590	6670	4790	5750
110	7240	5710	4220	4940	8300	6470	4670	5600
105	6970	5530	4110	4800	8010	6270	4550	5440
100	6710	5340	4000	4650	7720	6070	4430	5290
95	6440	5160	3880	4510	7430	5870	4310	5130

Flaps 30

Landing Weight (1000 lb)	Wind							
	0 Knots				10 Knots Tailwind			
	MIN	MED	MAX	WET	MIN	MED	MAX	WET
150	8810	6810	4880	5880	10010	7660	5380	6630
140	8340	6480	4680	5620	9490	7300	5170	6340
130	7830	6120	4460	5330	8940	6910	4940	6030
125	7580	5950	4360	5190	8680	6730	4830	5880
120	7340	5780	4260	5060	8410	6540	4710	5730
115	7090	5610	4150	4920	8140	6350	4600	5580
110	6850	5430	4050	4780	7870	6170	4490	5430
105	6600	5260	3950	4650	7600	5980	4380	5280
100	6350	5090	3840	4510	7330	5790	4270	5130
95	6110	4920	3740	4370	7060	5600	4150	4980

Flaps 40

Landing Weight (1000 lb)	Wind							
	0 Knots				10 Knots Tailwind			
	MIN	MED	MAX	WET	MIN	MED	MAX	WET
150	8540	6620	4760	5800	9710	7450	5250	6550
140	8070	6280	4560	5530	9210	7090	5040	6250
130	7570	5930	4350	5250	8670	6710	4820	5940
125	7340	5770	4250	5110	8410	6530	4710	5790
120	7100	5600	4150	4980	8150	6350	4600	5650
115	6870	5440	4050	4840	7900	6170	4490	5500
110	6630	5270	3950	4710	7640	5990	4390	5350
105	6400	5110	3850	4570	7380	5810	4280	5210
100	6160	4940	3750	4440	7130	5630	4170	5060
95	5930	4780	3650	4310	6870	5450	4060	4910

Landing Distance (4001 to 6000 feet pressure altitude)

Flaps 15

Landing Weight (1000 lb)	Wind							
	0 Knots				10 Knots Tailwind			
	MIN	MED	MAX	WET	MIN	MED	MAX	WET
190	12190	9160	7030	9140	13620	10180	8640	10680
180	11630	8770	6750	8680	13020	9760	8260	10120
170	11050	8370	6030	8170	12400	9320	7140	9540
160	10550	8020	5690	7730	11870	8950	6380	9040
150	10010	7650	5370	6450	11290	8550	5910	7240
140	9450	7260	5140	6140	10690	8140	5660	6900
130	8850	6840	4890	5820	10050	7690	5400	6550
125	8560	6640	4770	5660	9740	7470	5270	6380
120	8270	6430	4650	5500	9420	7250	5140	6210
115	7980	6230	4530	5340	9110	7030	5010	6040
110	7690	6030	4410	5190	8790	6810	4880	5870
105	7400	5830	4290	5030	8480	6590	4750	5700
100	7120	5630	4170	4880	8170	6380	4620	5530
95	6830	5430	4050	4720	7860	6160	4490	5360

Flaps 30

Landing Weight (1000 lb)	Wind							
	0 Knots				10 Knots Tailwind			
	MIN	MED	MAX	WET	MIN	MED	MAX	WET
150	9410	7230	5130	6220	10650	8110	5650	6990
140	8890	6870	4910	5930	10090	7720	5420	6680
130	8340	6480	4680	5620	9500	7300	5170	6340
125	8070	6290	4570	5470	9210	7100	5050	6180
120	7800	6100	4450	5320	8910	6890	4930	6020
115	7530	5920	4340	5170	8620	6690	4800	5850
110	7260	5730	4230	5020	8330	6480	4680	5690
105	7000	5540	4120	4870	8040	6280	4560	5530
100	6740	5360	4000	4720	7750	6080	4440	5370
95	6470	5170	3890	4580	7460	5880	4320	5210

Flaps 40

Landing Weight (1000 lb)	Wind							
	0 Knots				10 Knots Tailwind			
	MIN	MED	MAX	WET	MIN	MED	MAX	WET
150	9130	7030	5010	6140	10350	7900	5520	6920
140	8620	6670	4790	5850	9800	7510	5290	6600
130	8080	6290	4570	5540	9210	7090	5040	6260
125	7820	6100	4450	5390	8930	6890	4930	6090
120	7550	5920	4340	5240	8640	6690	4810	5930
115	7290	5740	4230	5090	8360	6490	4690	5770
110	7030	5550	4120	4940	8080	6300	4570	5610
105	6780	5370	4020	4790	7800	6100	4450	5450
100	6530	5200	3910	4650	7530	5910	4340	5290
95	6280	5020	3800	4510	7250	5710	4220	5130

Non-normal Configuration Landing Distance

		Landing Distance	
Landing Configuration	Approach Speed	Weight Correction to Actual Landing Weight	Use Corrected Weight and Landing Distance Chart for
Hydraulic System A Inoperative Flaps 15	$V_{REF\ 15}$	0	Flaps 15
Hydraulic System A Inoperative Flaps 30	$V_{REF\ 30}$	0	Flaps 30
Hydraulic System A Inoperative Flaps 40	$V_{REF\ 40}$	0	Flaps 40
Hydraulic System B Inoperative Flaps 15	$V_{REF\ 15}$	0	Flaps 15
Hydraulic System A&B Inoperative (Manual Reversion)	$V_{REF\ 15}$	+23000	Flaps 15
Leading Edge Asymmetry or Failure	$V_{REF\ 15}$ + 5	0	Flaps 15
Trailing Edge Asym or Failure Flaps < 1	$V_{REF\ 40}$ + 40	0	Flaps 15
Trailing Edge Asym or Failure 1 < Flaps < 15	$V_{REF\ 40}$ + 30	0	Flaps 15
Trailing Edge Asym or Failure 15 < Flaps < 30	$V_{REF\ 15}$	0	Flaps 15
All Flaps and Slats Up	$V_{REF\ 40}$ + 55	+13500	Flaps 15
Jammed Stabilizer	$V_{REF\ 15}$	0	Flaps 15
Anti-skid Inoperative DRY Runway	V_{REF}	0	MIN Braking * (MAX braking req'd)
Anti-skid Inoperative WET Runway	V_{REF}	0	MIN Braking + 2000 ** (MAX braking req'd)

* Enter Landing Distance table for the desired flap setting with the actual weight and look up the MIN distance. The MIN distance is the approximate landing distance for an anti-skid inop on a dry runway using maximum anti-skid inop braking techniques.

** Enter Landing Distance table for the desired flap setting with the actual weight and look up the MIN distance. The MIN distance plus 2000 feet is the approximate landing distance for an anti-skid inop on a wet runway using maximum anti-skid inop braking techniques.

Flight Attendant and Passenger Considerations

When emergencies arise, every attempt must be made to keep the Flight Attendants informed of the situation. When time permits, the Flight Attendants should be thoroughly briefed on the problem and any corrective actions that might be attempted. In any case, give the Flight Attendants time to accomplish their required procedures for the particular emergency.

The Flight Attendants will be advised to, **"Secure The Cabin"** when, in the Captain's judgment, the emergency does not indicate the probability of evacuation.

The Flight Attendants will be advised to, **"Prepare The Cabin"** when, in the Captain's judgment, the emergency does indicate the probability of an evacuation.

Some emergencies may require that passengers deplane a great distance from the terminal area. If, in the Captain's judgment, no danger exists, passengers should be kept onboard the aircraft until stairs are available and deplaning can be accomplished in an orderly manner, with the passengers taking their essential belongings. If passengers remain onboard in these circumstances, at least one door slide must be engaged to provide an immediate passenger egress route. In all such incidents, the Captain will assume command outside the aircraft, and remain with the passengers until replaced by authorized Southwest Airlines station personnel.

Bulletin 16-05

To: All Pilots
From: Greg Crum, V.P. of Flight Operations
Date: August 9, 2005
Subject: Electronic Weight and Balance (EWB)

This bulletin replaces and cancels FOM Bulletin 04-15, "Electronic Weight and Balance." Please mark Bulletin 04-15 as cancelled in the Bulletin Matrix, and remove the bulletin from the *FOM*.

This is a one-part bulletin consisting of eight white pages. The white pages stay in the bulletin section of the *FOM*.

FAA Mandated Changes to the Weight and Balance Program

NTSB findings from the January 8, 2003 crash of an Air Midwest commuter aircraft in Charlotte, NC indicate a contributing factor to the crash was the improper documentation of weight (CG limits were exceeded) in the cargo hold of the aircraft. Based on those results, the FAA issued an Advisory Circular (AC) to all U.S. commercial carriers requiring two bag weights ("normal" and "heavy") be used in their respective weight and balance programs beginning August 11, 2005. According to the AC, a "normal" bag (weighing up to 50 lbs) must be accounted for as 30 lbs, and a "heavy" bag (weighing 51 to 100 lbs) must be accounted for as 60 lbs on the Operations Loading Schedule.

The following summarizes the FAA mandated changes to the Southwest Airlines Weight and Balance Program:

- Normal bag weight is considered 30 lbs for any checked bag weighing up to 50 lbs.
- Heavy bag weight is considered 60 lbs for any checked bag weighing more than 50 lbs and up to 100 lbs.
- Any bag weighing more than 100 lbs is considered cargo and must use the actual weight.
- Child weight is increased to 90 lbs.
- Fourth Crewmember weight is increased to 199 lbs.
- Increase of Flightcrew and Flight Attendant weights are included in the OEW.
- Both the EWB and manual Loading Schedules have been modified to show "STD Bags" and "Heavy Bags."
- First and second jumpseat observer adjusted weights remain unchanged.
- Balance Limits remain unchanged.

Updated OPC Loading Schedule Adjustments Screen

Effective August 4, 2005, all aircraft OPCs will have been updated with a new OPC Loading Schedule Adjustments screen. The changes to the screen reflect the changes to the revised EWB and manual Loading Schedules and include the following:

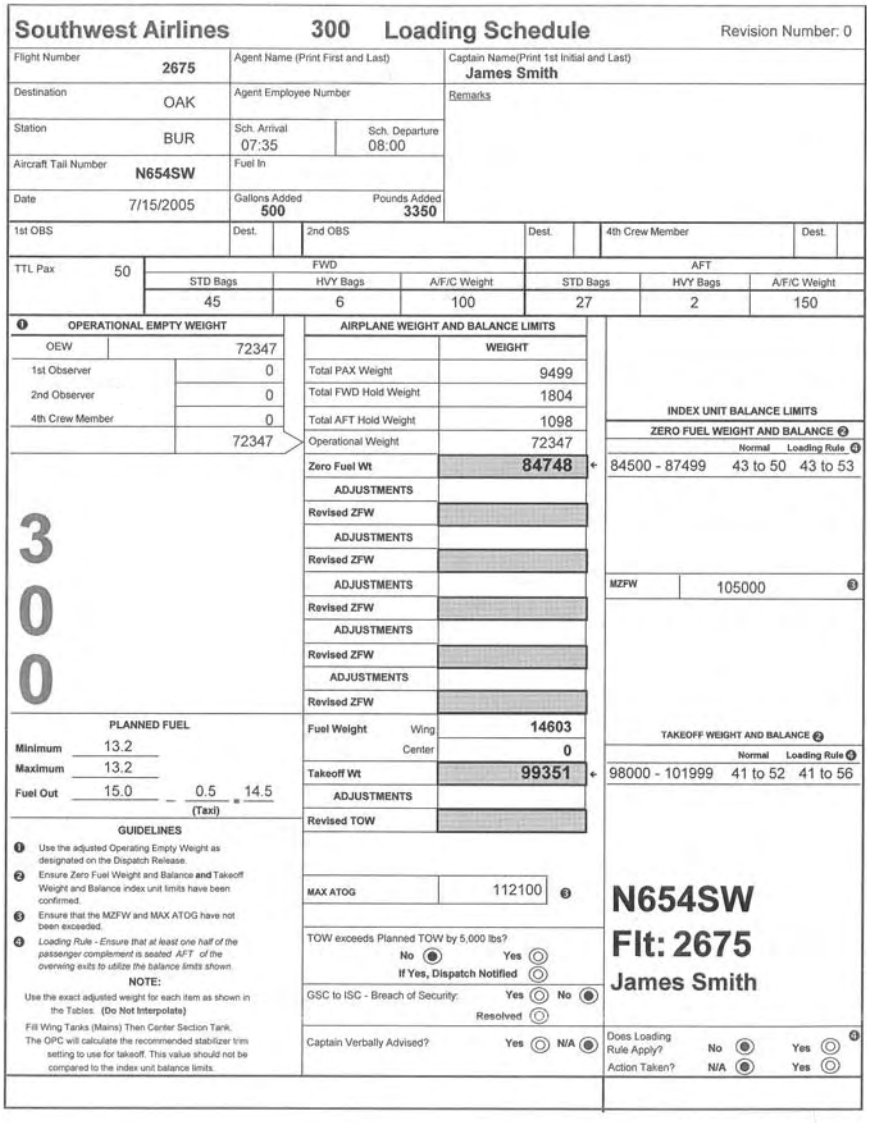
- Additional entries for heavy bags for both the FWD and AFT cargo bins
- Revised names for the existing FWD and AFT bag entries

Examples of the updated OPC Loading Schedule Adjustments screen and EWB Loading Schedule are included in this bulletin.

Electronic Weight and Balance

Although the basic layout of the EWB Loading Schedule remains the same as the manually generated Loading Schedule, changes and enhancements include the following:

- Adjusted Weight values are determined automatically.
- Arithmetic computations are accomplished by the computer.
- The Loading Schedule is electronically signed by the Operations Agent using password verification.
- Fuel added is automatically converted from gallons to pounds, simplifying the fuel audit process.
- Some administrative boxes used by the Operations Agent are removed.
- The EWB Loading Schedule is single-sided. The Bags column is divided to show the number of both standard (STD) and heavy (HVY) bags.



Southwest Airlines **300** **Loading Schedule** Revision Number: 0

Flight Number: 2675	Agent Name (Print First and Last)	Captain Name(Print 1st Initial and Last): James Smith	
Destination: OAK	Agent Employee Number	Remarks	
Station: BUR	Sch. Arrival: 07:35	Sch. Departure: 08:00	
Aircraft Tail Number: N654SW	Fuel In		
Date: 7/15/2005	Gallons Added: 500	Pounds Added: 3350	

1st OBS	Dest.	2nd OBS	Dest.	4th Crew Member	Dest.

TTL Pax	FWD			AFT		
	STD Bags	HVY Bags	A/F/C Weight	STD Bags	HVY Bags	A/F/C Weight
50	45	6	100	27	2	150

❶ OPERATIONAL EMPTY WEIGHT

OEW	72347
1st Observer	0
2nd Observer	0
4th Crew Member	0
	72347

AIRPLANE WEIGHT AND BALANCE LIMITS

	WEIGHT
Total PAX Weight	9499
Total FWD Hold Weight	1804
Total AFT Hold Weight	1098
Operational Weight	72347
Zero Fuel Wt	**84748** ←
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	

INDEX UNIT BALANCE LIMITS

ZERO FUEL WEIGHT AND BALANCE ❷

	Normal	Loading Rule ❹
84500 - 87499	43 to 50	43 to 53

MZFW	105000 ❸

TAKEOFF WEIGHT AND BALANCE ❷

	Normal	Loading Rule ❹
98000 - 101999	41 to 52	41 to 56

PLANNED FUEL

Minimum	13.2		
Maximum	13.2		
Fuel Out	15.0	0.5 (Taxi)	14.5

Fuel Weight	Wing	14603
	Center	0
Takeoff Wt		99351 ←
ADJUSTMENTS		
Revised TOW		

GUIDELINES

❶ Use the adjusted Operating Empty Weight as designated on the Dispatch Release.

❷ Ensure Zero Fuel Weight and Balance **and** Takeoff Weight and Balance index unit limits have been confirmed.

❸ Ensure that the MZFW and MAX ATOG have not been exceeded.

❹ *Loading Rule - Ensure that at least one half of the passenger complement is seated AFT of the overwing exits to utilize the balance limits shown.*

NOTE:

Use the exact adjusted weight for each item as shown in the Tables. **(Do Not Interpolate)**

Fill Wing Tanks (Mains) Then Center Section Tank.

The OPC will calculate the recommended stabilizer trim setting to use for takeoff. This value should not be compared to the index unit balance limits.

MAX ATOG	112100 ❸

TOW exceeds Planned TOW by 5,000 lbs? No ◉ Yes ○ If Yes, Dispatch Notified ○

GSC to ISC - Breach of Security: Yes ○ No ◉ Resolved ○

Captain Verbally Advised? Yes ○ N/A ◉

Does Loading Rule Apply? No ◉ Yes ○ ❹

Action Taken? N/A ◉ Yes ○

300

N654SW

Flt: 2675

James Smith

Example of an EWB Loading Schedule

Southwest Airlines — Loading Schedule — 300

Flight Number	Agent Name (Print First and Last)	Captain Name (Print 1st Initial and Last)	Wheelchair(s)-BYO Dest.
			#

Destination	Agent Employee Number	Infant Items to Jetbridge Dest.	Wheelchair(s) to Jetbridge Dest.
		#	#

Station	Sch. Arrival / Sch. Departure	Assistive Devices to Jetbridge Dest.	Remarks
		#	

Aircraft Tail Number	Fuel In	Unaccompanied Minors Dest.	
N		#	

Date	Gallons Added	Delay Code/Minutes	
/ /			

1st OBS	Dest.	MR SA	2nd OBS	Dest.	MR SA	4th Crew Member	Dest.	MR SA

Load Code	FWD Hold Bags/Weight						AFT Hold Bags/Weight					
	STD Bags	HVY Bags	A/F	C/M	A/M	TTL	STD Bags	HVY Bags	A/F	C/M	A/M	TTL
THRU												
LOCAL												
Thru Pax			X 2 =		Weight				X 2 =		Weight	
TTL Pax		Bags			Equiv. Pieces			Bags			Equiv. Pieces	
	TTL PCS						TTL PCS					

OPERATIONAL EMPTY WEIGHT

1. OEW
- 1st Observer + 201
- 2nd Observer + 201
- 4th Crew Member + 199

ADJUSTMENT (+ON) (-OFF)

ADJUSTMENT (+ON) (-OFF)

ADJUSTMENT (+ON) (-OFF)

PLANNED FUEL

Minimum _____

Maximum _____

Fuel Out _____ — _____ = _____ (Taxi)

FINAL ADJUSTMENT (+ON) (-OFF)

AIRPLANE WEIGHT AND BALANCE LIMITS

	WEIGHT
Total PAX Weight	
Total FWD Hold Weight	
Total AFT Hold Weight	
Operational Weight	
Zero Fuel Wt	
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	
Fuel Weight Wing	
Center	
Takeoff Wt	
ADJUSTMENTS	
Revised TOW	
MAX ATOG	3

TOW exceeds Planned TOW by 5,000 lbs?

No ◯ Yes ◯

If Yes, Dispatch Notified ◯

GSC to ISC - Breach of Security: Yes ◯ No ◯

Resolved ◯

Captain Verbally Advised? Yes ◯ N/A ◯

INDEX UNIT BALANCE LIMITS

ZERO FUEL WEIGHT AND BALANCE 2

	Normal	Loading Rule 4
Below - 72499	47	47 to 51
72500 - 77499	46 to 48	46 to 51
77500 - 80499	45 to 48	45 to 52
80500 - 84499	44 to 49	44 to 53
84500 - 87499	43 to 50	43 to 53
87500 - 90499	42 to 50	42 to 54
90500 - 93499	42 to 51	42 to 54
93500 - 95999	41 to 51	41 to 55
96000 - 97999	41 to 52	41 to 55
98000 -101999	41 to 52	41 to 56
102000 -103499	41 to 53	41 to 56
103500 - 105000	41 to 53	41 to 57
105001 - 106500	41 to 53	41 to 57

MZFW 3

TAKEOFF WEIGHT AND BALANCE 2

	Normal	Loading Rule 4
77500 - 80499	45 to 48	45 to 52
80500 - 84499	44 to 49	44 to 53
84500 - 87499	43 to 50	43 to 53
87500 - 90499	42 to 50	42 to 54
90500 - 93499	42 to 51	42 to 54
93500 - 95999	41 to 51	41 to 55
96000 - 97999	41 to 52	41 to 55
98000 -101999	41 to 52	41 to 56
102000 -103499	41 to 53	41 to 56
103500 -107499	41 to 53	41 to 57
107500 -108999	41 to 54	41 to 57
109000 -109999	41 to 54	41 to 58
110000 -111999	40 to 54	40 to 58
112000 -113499	40 to 55	40 to 58
113500 -114499	40 to 53	40 to 57
114500 -118999	40 to 52	40 to 56
119000 -122499	40 to 51	40 to 55
122500 -125499	40 to 50	40 to 54
125500 -128499	40 to 49	40 to 53
128500 -130499	40 to 48	40 to 52
130500 -131999	40 to 47	40 to 51
132000 -133999	41 to 47	41 to 51
134000 -134999	42 to 47	42 to 51
135000 -135999	43 to 47	43 to 50
136000 -136499	44 to 46	44 to 50
136500 -137500	45 to 46	45 to 50
137501 -137999		46 to 49
138000 -138500		47 to 49
138501 -139000		48 to 49

Does Loading Rule Apply? No ◯ Yes ◯ 4

Action Taken? N/A ◯ Yes ◯

GUIDELINES

1. Use the adjusted Operating Empty Weight as designated on the Dispatch Release.
2. Ensure Zero Fuel Weight and Balance **and** Takeoff Weight and Balance index unit limits have been confirmed.
3. Ensure that the MZFW and MAX ATOG have not been exceeded.
4. *Loading Rule - Ensure that at least one half of the passenger complement is seated AFT of the overwing exits to utilize the balance limits shown.*

NOTE:

- Use the exact adjusted weight for each item as shown in the Tables. **(Do Not Interpolate)**
- Fill Wing Tanks (Mains) Then Center Section Tank.
- The OPC will calculate the recommended stabilizer trim setting to use for takeoff. This value should not be compared to the index unit balance limits.

Agent Full Signature

SWA WN 253 (Rev 7/05)

Example of a Manual Loading Schedule

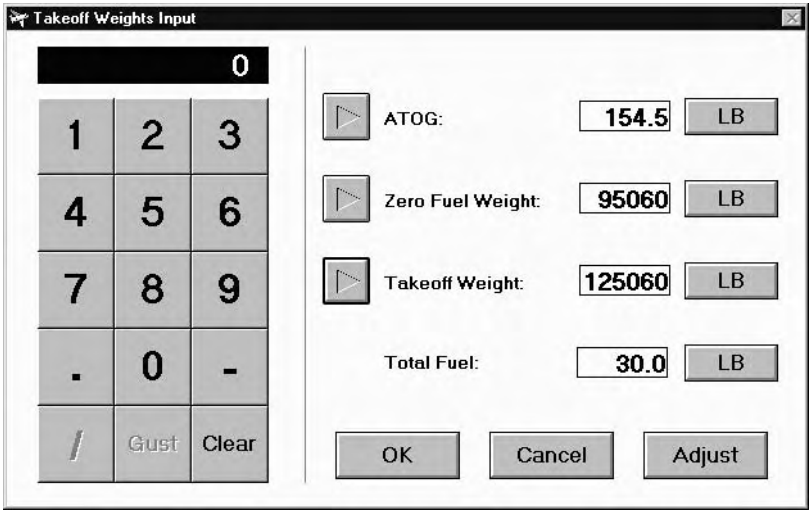
OPC Loading Schedule Adjustments

The index unit tables used for weight adjustments and printed on the back of the manually generated Loading Schedule are incorporated into the OPC through a new Loading Schedule Adjustments screen.

Note: Make all adjustments on the ground prior to takeoff.

Accessing the Loading Schedule Adjustments Screen

To access the Loading Schedule Adjustments screen, click the Adjust button on the Takeoff Weights Input screen after entering the original ZFW and TOW from the Loading Schedule.



Example of the Adjust Button on the Takeoff Weights Input Screen

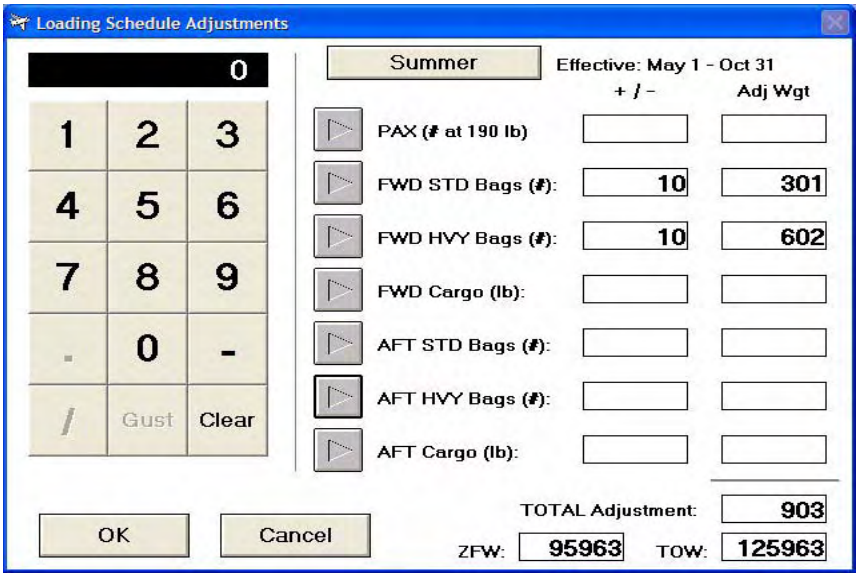
Using the Loading Schedule Adjustments Screen

Using the Loading Schedule Adjustments screen, changes can be made to cargo weights and the number of passengers and bags. Any other changes will require generating a new Loading Schedule.

To add passengers, bags, or weights, enter a positive number. To subtract passengers, bags, or weights, enter a negative number. Use the Transfer (Arrow) buttons to transfer values from the scratchpad to the applicable location boxes (clicking the location boxes to transfer values can cause errors). Weight adjustments will be totaled at the bottom of the screen and applied to both the ZFW and TOW.

The entered values are displayed in the left-hand column (+/-), and the calculated adjusted weight values are displayed in the right-hand column (Adj Wgt). A total of all adjustments displays at the bottom of the screen along with the newly calculated ZFW and TOW.

Validation of the new ZFW and TOW will occur when the OK button is pressed. If either the index unit limits or structural limits are exceeded, a warning message will be displayed and the OPC will not accept the adjustments.



Example of the OPC Loading Schedule Adjustments Screen

Entering Passenger and Bag Weight Adjustments

The Season button has four possible entries (Summer/Winter/Summer to Child/ Winter to Child) that are changed by clicking the button. This button indicates which weights are to be used for the passenger adjustment. The "Summer to Child" and "Winter to Child" options are only to be used to change a required number of passengers from full weight passengers to child weight passengers.

Child weight adjustments are accomplished by doing the following:

1. Click the Season button (Summer/Winter/Summer to Child/Winter to Child) until the applicable seasonal selection displays.
2. Enter the number of passengers as a negative number to convert to child weights and subtract the weight difference.
3. Click OK.

To move bags from one bin to another, subtract the bags from the bin from which they were removed (a negative value) and add the same number to the bin to which they were relocated.

The OPC Loading Schedule Adjustments screen should be used to make adjustments to both manual and EWB Loading Schedules. **When the OPC is used to make zero fuel weight adjustments, write the revised zero fuel weight on the Loading Schedule**.

Heavy and Standard Bags

Checked bags are now differentiated into two categories. Bags weighing up to 50 pounds are considered standard (STD) bags and have an average weight of 30 pounds each. Bags weighing 51 to 100 pounds are considered heavy (HVY) and have an average weight of 60 pounds each.

OPC Inoperative

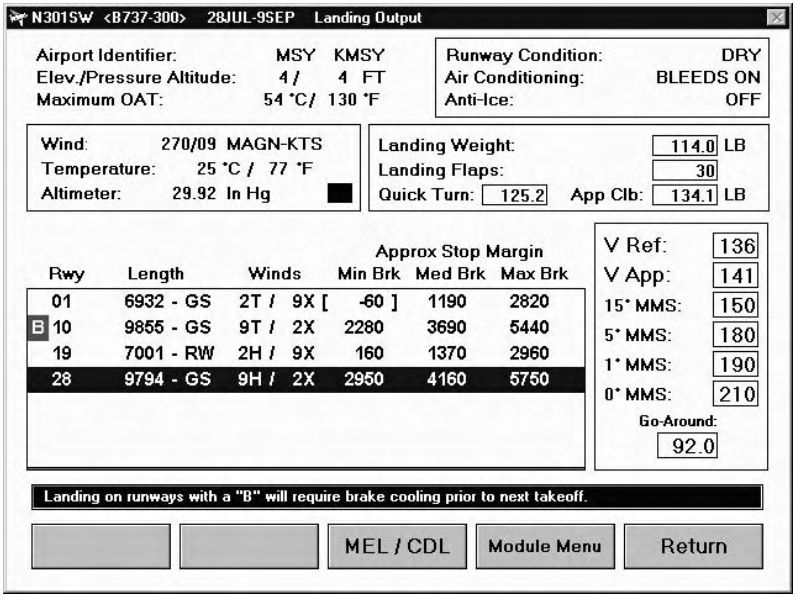
If the OPC is inoperative and adjustments are required, do one of the following:

- At the gate: The Ops Agent must print a new Loading Schedule and hand deliver it to the Flightcrew.
- After pushback: Station Operations must provide the new ZFW and TOW, and the Flightcrew must contact Dispatch for new Takeoff data calculations and V Speeds.

Landing Output Screen

In a continuing effort to improve the usefulness of the data that is calculated and presented by the OPC, the Approximate Landing Distances shown on the Landing Output screen display approximate stopping margins. The landing stopping margin is defined as the difference between the calculated landing distance and the available runway length.

Bracketed distances appear when the stopping margin is negative for a given deceleration rate (i.e., the landing distance is longer than the available runway length). Flap selection policy remains unchanged (i.e., minimum braking bracketed indicates a Flap 40 recommended landing).



Example of the Landing Output Screen

L Prior to arriving at or departing any airport designated as a "Special Airport," Pilots will review the *Jeppesen* supplied pictorial representation of that airport.

L Except when the *QRH* or *MEL* specifically states otherwise, under no circumstances will a warning horn or bell circuit breaker be pulled to silence an aural warning.

AFM L **(-700)** Certified only for flaps 1, 5, 10, 15, and 25 takeoffs.

AFM L **(-300)** Certified only for flaps 1, 5, and 15 takeoffs.

AFM L **(-500)** Takeoff is not authorized at flap position 1 or 2.

AFM L **(-500)** Certified only for flaps 5 and 15 takeoffs.

L Minimum altitude for flight director plus LNAV engagement after takeoff or missed approach is 400 feet AGL.

L Minimum altitude for autopilot plus LNAV engagement after takeoff or missed approach is 1000 feet AGL.

L The VNAV function will not be engaged. However, VNAV information presented on displays may be used as advisory information.

✔ **L** Flightcrews must immediately respond to TCAS information (both TAs and RAs) by using the TCAS (Traffic Avoidance) guidelines located in "Non-normal Operations: Maneuvers and Profiles."

✔ **AFM L** Pilots are authorized to deviate from an ATC clearance to the extent necessary to comply with the TCAS II Resolution Advisory (RA).

P Turbulent Air Penetration Speeds at or below 15,000 MSL: 230-250 KIAS

L Turbulent Air Penetration Speeds above 15,000 MSL:

(-700) 280 KIAS/0.76 Mach
(-300) 280 KIAS/0.73 Mach
(-500) 280 KIAS/0.73 Mach

L Pilots are not authorized to conduct contact approaches (OpSpec).

L Pilots are not authorized to conduct Precision Approach Radar (PAR) approaches, except in an emergency (OpSpec).

P Aircraft will not land if exceeding the landing performance limits computed by the Onboard Performance Computer (OPC) or, in the absence of the OPC, other Southwest Airlines/FAA approved landing performance data.

L The use of a pack is not authorized when a preconditioned air source is being used to heat or cool the aircraft.

P Aircraft fuel tanks must be dripsticked to verify fuel quantity after a ground transfer of fuel.

P Auto brakes, if operational, will be used when the Min(2) stopping margin is less than 500 feet and the reported or anticipated runway condition is not DRY. Auto brake use in all other situations is at the Pilot's discretion. When auto brakes are used, comply with the following:

- Use the lowest auto brake setting resulting in a stopping margin of 500 feet or more.
- If a stopping margin of at least 500 feet cannot be achieved with any auto brake setting, landing is still authorized using MAX, provided a positive stopping margin is computed.
- Use of auto brake level 1 is not authorized.

Takeoff and Landing Considerations

Takeoff Is Not Authorized under the Following Conditions

L Weather conditions are below FAA established minima.

L Wind limitations are exceeded.

L Observations from the cockpit indicate that takeoff cannot be made by following approved procedures.

L During night operations, when the Captain cannot ensure that sufficient runway lighting exists to allow the takeoff to be completed safely. ❶

L Greater than 1/2 inch water or slush on the runway. ❷

L Greater than 1 inch of wet snow on the runway. ❷

L Greater than 4 inches of dry snow on the runway. ❷

L Braking action reported as "NIL." ❸

L Greater than light freezing rain at the airport. ❹

L Known or probable severe icing conditions. ❺ ❼ ❽

L Known or probable severe turbulence. ❺

L Frost, snow, or ice is adhering to the leading edge devices, any control surface, tab surface, upper wing surface, or balance cavity. However, frost up to 1/8 inch thick on the lower wing surfaces due to cold fuel is permissible. ❻

L Either thrust reverser is inoperative and the runway is contaminated with clutter or the braking action is less than "GOOD."

Takeoff Is Not Recommended under the Following Conditions

R The plowed or usable runway width is less than 100 feet.

Notes:

❶ In all cases, FAA approved temporary lighting may be substituted for portions of normal lights, provided corresponding minima reductions are applied.

❷ See "Definitions" in this section.

❸ Takeoffs will not be attempted if braking action on the taxiways, ramps, or any portion of the runway is reported "NIL" by air carrier jet aircraft. Friction measuring device values (Tapley or Mu-meter) should be used in conjunction with air carrier jet braking action reports. Braking action and friction measuring information are described in "Normal Operations: Landing."

Note: It is acceptable to taxi/tow at airports with taxiways and/or ramps reported as "NIL" so long as the taxiway(s) and/or ramp(s) or portions thereof to be used are reported better than "NIL."

❹ The precipitation intensity stated in weather reports (ASOS, ATIS, weather briefer, etc.) or when received from an ATC controller is "moderate" unless it is modified by "light (-)" or "heavy (+)." Exceptions to this are ice crystals and hail, which do not receive intensifiers.

❺ A combination of forecasts, PIREPs, aircraft types, times, locations, and altitudes must be considered.

❻ Thin hoarfrost is acceptable on the upper surface of the fuselage provided all vents and ports are clear. Thin hoarfrost is a uniform white deposit of fine crystalline texture, which usually occurs on exposed surfaces on a cold and cloudless night, and which is thin enough to distinguish surface features underneath, such as paint lines, markings, or lettering.

❼ No aircraft will be dispatched, enroute operations continued, or a landing attempted when in the opinion of the Captain and/or Dispatcher icing conditions exist or are anticipated which might adversely affect the safety of the flight.

❽ Flights may be dispatched into light to moderate icing conditions only if all anti-icing equipment for the aircraft is in operable condition.

New Hire Pilot Takeoff and Landing Restrictions

During a First Officer's first 100 hours, unless flying with a Check Pilot, FARs require that the Captain takeoff and land in the following:

- At airports that are designated as "Special Airports" by the FAA which are highlighted by the OPC.
- Prevailing visibility is at or below 3/4 mile.
- RVR is at or below 4000 feet.
- Runway has water, snow, slush, or similar conditions that may adversely affect aircraft performance.
- Braking action is reported to be less than "GOOD."
- Crosswind is greater than 15 knots.
- Windshear is reported in the vicinity of the airport.
- Any other condition that makes it necessary for the Captain to conduct the takeoff or landing.

The Captain Will Land under the Following Conditions

L An engine is shutdown.

P Visibility is below 3/4 mile or 4000 RVR.

L Required by new hire Pilot landing restrictions.

Landing Is Not Authorized under the Following Conditions

L Weather conditions are below FAA established minima.

L Wind limitations are exceeded.

L During night operations, when all runway lights (edge, centerline, etc.) are inoperative. However, landing is permitted with partial runway lighting if the Captain determines there is adequate lighting to permit a safe landing. ❶

L Water or slush >1 inch on runway. ❷

L Wet snow >2 inches on runway. ❷

L Dry snow >6 inches on runway. ❷

L Braking action reported as "NIL." ❸

L Greater than light freezing rain at the airport. ❹

L Known or probable severe icing conditions. ❺ ❻ ❼

L Known or probable severe turbulence. ❺

L Either thrust reverser is inoperative and the runway is contaminated with clutter or the braking action is less than "GOOD."

P LAHSO

Landing Is Not Recommended under the Following Conditions

R The plowed or usable runway width is less than 100 feet.

Notes:

❶ In all cases, FAA approved temporary lighting may be substituted for portions of normal lights, provided corresponding minima reductions are applied.

❷ See "Definitions" in this section.

❸ Landings will not be attempted if braking action on the taxiways, ramps, or any portion of the runway is reported "NIL" by air carrier jet aircraft. Friction measuring device values (Tapley or Mu-meter) should be used in conjunction with air carrier jet braking action reports. Braking action and friction measuring information are described in "Normal Operations: Landing."

Note: It is acceptable to taxi/tow at airports with taxiways and/or ramps reported as "NIL" so long as the taxiway(s) and/or ramp(s) or portions thereof to be used are reported better than "NIL."

❹ The precipitation intensity stated in weather reports (ASOS, ATIS, weather briefer, etc.) or when received from an ATC controller is “moderate” unless it is modified by “light (-)” or “heavy (+).” Exceptions to this are ice crystals and hail, which do not receive intensifiers.

❺ A combination of forecasts, PIREPs, aircraft types, times, locations, and altitudes must be considered.

❻ No aircraft will be dispatched, enroute operations continued, or a landing attempted when in the opinion of the Captain and/or Dispatcher icing conditions exist or are anticipated which might adversely affect the safety of the flight.

❼ Flights may be dispatched into light to moderate icing conditions only if all deicing equipment for the aircraft is in operable condition.

Takeoff Clutter Considerations

Caution: Flaps 5 configuration is recommended for takeoff when conditions are conducive to ice accumulation on the wing and tail surfaces, especially the upper surfaces. In icing conditions, a higher angle of attack may contribute to unwanted pitch-up and/or roll-off during rotation and lift off. Flap position 5 provides a better margin of performance to prevent this condition.

Definitions

- Slush is snow mixed with water.
- Snow is considered wet if it can be compacted easily by hand.
- Snow is considered dry if it cannot be compacted easily by hand.
- A runway is considered wet when it has a shiny appearance due to a thin layer of water less than 1/8 (0.125) inch.
- "Thin Clutter" is an OPC term that means more than 25 percent of the runway surface is covered with the following:
  - 0.125 to 0.25 inch standing water or slush
  - 0.125 inch up to and including 0.50 inch wet snow
  - 0.75 inch up to and including 2.0 inches dry (loose) snow
- "0.50 in Clutter" is an OPC term that means more than 25 percent of the runway surface is covered with the following:
  - Greater than 0.25 inch up to and including 0.50 inch standing water or slush
  - Greater than 0.50 inch up to and including 1 inch wet snow
  - Greater than 2.0 inches up to and including 4 inches dry (loose) snow
- Freezing is a description that is added to further amplify types of weather such as precipitation or obscurations and is defined as the following:
  - When freezing fog is occurring and the temperature is below 0° C
  - When drizzle and/or rain freezes upon impact and forms a glaze on the ground or other exposed objects
- Moderate rain is defined as rain in which individual drops are not clearly identifiable; spray is observable just above pavements and other hard surfaces.
- Heavy rain is defined as rain that seemingly falls in sheets; individual drops are not identifiable; heavy spray to a height of several inches is observed over hard surfaces.
- Moderate freezing rain and heavy freezing rain can be defined by combining the appropriate rain definition with the freezing definition.

Wind Considerations

R Maximum recommended wind velocity for takeoff and landing is 50 knots steady and 70 knots peak gusts.

Gust velocities and directions are advisory; however, operations with steady wind components at or near 35 knots accompanied by higher gusts require careful evaluation of runway surface conditions and width to ensure the safety of the operation.

Use steady state wind velocity for crosswind computations.

Use peak gust wind velocity for tailwind computations.

Wind conditions reported as “light and variable” may be entered into the OPC as calm.

Wind direction input into Swift or the OPC must have a magnetic north reference. Therefore, if wind direction is provided by a Terminal Forecast (TAF), a Routine weather report (METAR), or a non-routine weather report (SPECI), it must first be converted from true north reference to magnetic north reference by correcting for local magnetic variation.

Takeoff and Landing Wind Components

Wind Components Limitations AFM (L)				
Conditions	Steady X-Wind		Peak Gust Tailwind	
	Takeoff	Landing	Takeoff	Landing
Dry	35	35	10	10
Wet	35	35	10	10
✔ <4000 RVR or 3/4	35	10	10	10
✔ <1600 RVR or 1/4	20	10	10	10
✔ < 600 RVR	10	—	10	—
✔ Clutter ❶	20	20	10	10
✔ Braking Fair	15	15	10	10
✔ Braking Poor	10	10	5	5

L 25 knot maximum headwind for HGS:

- takeoffs below 600 RVR
- approaches below 1800 RVR or Special CAT I approaches below 2400 RVR

Note:

R ❶ Clutter reductions and recommendations apply only when clutter covers more than 25 percent of the runway surface.

Wet Runway

Dispatch will plan flights on the basis of "wet" runways when appropriate weather forecasts call for:

- **P** Showers or occasional showers
- **P** Drizzle
- **P** Continuous light rain
- **P** Freezing rain (of any intensity)
- **P** Snow
- **L** The visibility to be below 3/4 mile or 4000 RVR (OpSpec, applies only to landings).

Fuel System

Fuel AFM		
	-700	**-300/-500**
✔ Max Fuel Tank Temperature	+49°C	
✔ Min Fuel Tank Temperature	-37°C ❶	
Max Fuel Quantity Each Wing Center	 8,967 lbs 29,685 lbs	 10,643 lbs 16,422 lbs ❺
Max Fuel Imbalance Taxi, T.O., Flight, and Landing	1000 pounds	
Fuel Types ❹	JET A, A1, JP5, JP8	
✔ Fuel Distribution	Main tanks must be full if the center tank quantity is greater than 1000 pounds. ❷❸❻ Use center tank to depletion followed by wing tank fuel.	

✔ **AFM L** Fuel crossfeed valve must be closed for takeoff and landing (**-300/-500**: N/A).

✔ **AFM L** For ground operation, center tank fuel pump switches must not be positioned to ON unless the center tank fuel quantity exceeds 1,000 pounds, except when defueling or transferring fuel.

✔ **AFM L** Center tank fuel pump switches must be positioned to OFF when both center tank fuel pump low pressure lights illuminate.

Note: The limitation does not change the existing normal procedure to turn the center tank fuel pump switches to OFF at the first indication of low pressure from either pump.

✔ **AFM L** Center tank fuel pumps must not be ON unless personnel are available on the flightdeck to monitor low pressure lights.

Notes:

❶ Jet A freeze point is minus 40° Celsius and other listed fuels freeze at lower temperatures.

❷ 1000 pounds may be retained in the center tank provided the effects of balance have been considered.

❸ (**-300/-500**) Center tank fuel pumps must be ON for takeoff with more than 1000 pounds of fuel in the center tank.

❹ Use of Jet B or JP4 in B737-300/-500/-700 aircraft is prohibited.

❺ Approximately 14,422 lbs on aircraft with “Center Fuel Tank Qty Limit” placard located in front of the refueling station.

❻ Some MEL items can override this limitation.

Center Tank Fuel Limitations from AD 2002-19-52 (-300/-500: N/A)

At All Times

✔ **AFM L** The fuel pump switches must be positioned OFF at the first indication of fuel pump low pressure.

AFM L The center tank fuel quantity indication system must be operative when dispatched with a fuel load that requires the use of the center tanks.

* **AFM L** If the main tanks are not full, the zero fuel gross weight of the airplane plus the weight of center tank fuel may exceed the maximum zero fuel gross weight by up to 5000 pounds for takeoff, climb, and cruise and up to 3000 pounds for descent and landing, provided that the effects of balance (CG) have been considered.

* This information is contained in the AD and is printed here as required by law. Southwest Airlines has chosen not to use this provision to exceed the maximum zero fuel weight.

Takeoff and Initial Climb

✔ **AFM L** Both center tank fuel pump switches must be positioned OFF for takeoff if center tank fuel quantity is less than 5000 pounds.

✔ **AFM L** When center tank fuel quantity is greater than 2000 pounds, turn on both center tank fuel pump switches above 10,000 feet or after reducing the pitch attitude to accelerate to 250 knots or greater.

Climb and Cruise

✔ **AFM L** If more than 2000 pounds of fuel remain in the center tank, both center tank fuel pump switches should be repositioned ON.

✔ **AFM L** Turn one center fuel pump switch OFF during climb or cruise when the center tank fuel quantity reaches approximately 2000 pounds. Open the crossfeed valve to minimize fuel imbalance.

When the MASTER CAUTION and FUEL system annunciator lights illuminate, turn the remaining center tank fuel pump switch OFF without delay and close the fuel crossfeed valve.

Altitude Clearances and Callouts

When ATC assigns a new altitude clearance or when cleared to a new altitude on a charted profile departure or arrival, accomplish the following:

- (PM) Acknowledge the clearance and set the new altitude restriction in the MCP altitude window.

- (PF) After the PM has set the correct altitude in the MCP altitude window, verbally acknowledge the new altitude assignment.

- (PF) If operational necessity requires an MCP altitude change and the PM is occupied with other priorities, the PF may acknowledge and set the new altitude.

For example: When the PM is off frequency calling the Station, the PF may acknowledge the new altitude assignment and set it in the MCP.

At 1000 feet prior to an assigned altitude, call the passing altitude for the assigned altitude.

For example, when leaving FL 240 for FL 250, an acceptable call would be '24 for 25.' The callout is made off of each Pilot's altimeter reading, not the altitude alert tone. If the passing altitude call is missed, call the current altitude. For example, the call might be, '24.3 for 25.' The intention is to promote and communicate altitude awareness and to ensure that the aircraft is leveling at the correct altitude by verifying altimeter indication and setting.

Recall and Master Caution

When required, perform a Recall Check.

- Depress either system annunciator light panel.

- Verify that both MASTER CAUTION lights illuminate.

The MASTER CAUTION system functions even if the individual system annunciator lights do not illuminate. It is not necessary to repeatedly press one or both panels to get all of the system annunciator lights to illuminate. Simply press and release either system annunciator panel.

- Release the system annunciator light panel.

The MASTER CAUTION lights should extinguish. If the MASTER CAUTION lights remain illuminated, with or without individual system annunciator lights, investigate the cause.

Respond to any MASTER CAUTION lights when they illuminate during operations.

When the MASTER CAUTION lights illuminate, note the accompanying system annunciator light. Then, respond as follows:

- MASTER CAUTION from known cause with normal Pilot flow items:

If the warning is caused by a routine crew action, cancel the MASTER CAUTION, and continue normally. An example is the ANTI-ICE light that illuminates after PROBE/PITOT HEAT switches are turned OFF.

- Known cause from Pilot actions:

  If the warning is caused knowingly by Pilot action, simply announce the cause to the other Pilot, cancel the MASTER CAUTION, and continue. An example is fuel balancing. Announce your intention to balance fuel, confirm the MASTER CAUTION and FUEL annunciator, and cancel the light.

- Unknown or delayed cause:

  Anytime the MASTER CAUTION light illuminates as a system alert, perform the following steps:

  - Note the illuminated system annunciator light(s).
  - Check referenced system panel(s) and note any illuminated lights.
  - Verbally communicate the indications or malfunctions.
  - Cancel the MASTER CAUTION.
  - Complete any checklist or QRH procedures, as required.

Do not intentionally leave the MASTER CAUTION light illuminated.

Do not leave the MASTER CAUTION light illuminated as a memory cue while performing any task (Example: fuel balancing). This undesirable practice defeats the alerting function of the Master Caution system. Any new warning would not generate a caution event.

Thrust Setting Definitions

Maximum Takeoff Thrust Setting: This is the full rated takeoff thrust for the installed engines as computed by the OPC (when 'Takeoff Thrust: MAXIMUM' is selected) and by the FMC (when the outside air temperature is entered). Use Maximum Takeoff thrust when it is required by the OPC (MAX N_1), FOM, or MEL.

Reduced Takeoff Thrust Setting: This is a reduced thrust setting computed by the OPC (i.e., 'Takeoff Power: REDUCED') and displayed as 'RED N_1.' If operationally feasible, use Reduced Thrust Settings whenever possible.

Emergency Thrust: This thrust is produced when the thrust levers are advanced to the forward stop. There are no FMC or OPC computed values for this thrust setting. It is intended for emergency use only (Examples: Windshear Encounters, Terrain Avoidance, or Stall Recoveries). On engines without electronic thrust limiting capability (EECs or PMCs), this may cause an engine limit exceedance and require a logbook entry.

Go-Around Thrust: This is the thrust normally used during a go-around/missed approach. It is computed by the OPC and the FMC. Normally, go-around thrust is automatically computed by the FMC and indicated by the N_1 bug.

The intention is to minimize Single Pilot operations and reduce workload during the Descent and Approach phases. Most of the arrival tasks are scheduled prior to the Top of Descent (TOD) point. The process follows this general flow:

- (PM) Before TOD duties:
  - Acquire the ATIS
  - Call In-Range to the Arrival Station
  - Make a passenger PA (optional)
  - Program the OPC to evaluate landing performance
- Both Pilots evaluate the conditions and agree on a plan.
- Both Pilots evaluate OPC results and landing conditions.
- Both pilots set their approach speeds and altimeter reference markers.
- (PF) Brief necessary arrival and approach items.

As a general point of reference, start about 40 NM short of the FMC-computed TOD. TOD is defined at that point where the FMC profile computes a continuous descent from Cruise altitude down to the arrival airport or charted/programmed crossing restriction. For airports where ATC gives step-down arrivals, or for low altitude Cruise, start about 150 NM out.

Arrival ATIS, In-Range Call, and Arrival PA

(PM) Acquire the arrival weather through broadcast ATIS or ACARS.

Do not delay this task to wait for new ATIS at the top of the hour. Experience has shown that weather changes between hourly observations do not have a significant effect on landing performance computations. The higher priority is completing all Descent and Approach planning tasks before starting Descent.

If you are unable to acquire the ATIS, for whatever reason, use the latest hourly observation from the Weather Package (shorter flights) or from Enroute updates from Dispatch (longer flights). Due to terrain masking, this may be the normal practice for some city pairs (Example: ONT arrivals from the north).

(PM) Make an In-Range call to the Arrival Station.

Call the Arrival Station with:

- Expected gate arrival time

- Expected gate arrival fuel

- Time-sensitive service requests

- Verification of Gate Services

Make the transmission concise to keep the frequency open for operational needs. Routine service requests should be delayed until parked at the gate. After establishing contact with the station, a typical call would be, '123 in range, arriving at 50 with fuel 10.2.'

If the entire flight is conducted below 10,000 feet MSL, the In-Range report may be completed in cruise.

If unable to contact the arrival station via radio or ACARS, contact the station after landing. Again, the priority is completing planning tasks before beginning descent.

(PM) Make an Arrival PA to the passengers, if desired.

OPC Programming for Landing

(PM) Evaluate landing performance on the OPC.

- Select the Landing Performance module.

- Select the arrival airport.

The OPC will display a message if the selected airport is a Special Qualification Airport.

- Select all available landing runways.

Do not select every runway, only the available runways (e.g., if LAX is landing west, do not select 6R/L or 7R/L). By selecting the available runways, OPC landing data can be easily analyzed, and the best landing runway selected. Also, if ATC changes the runway assignment, the new landing data is readily available.

It is company policy to avoid noise sensitive runways, except for operational necessity.

Input NOTAM restrictions, if required.

- Enter ATIS information.

Wind conditions reported as "light and variable" may be entered into the OPC as CALM.

- Select the OPC Landing Input screen.

- Enter runway conditions.

If other than DRY, toggle to the reported runway condition. All selections are used only for braking action reports, if necessary.

If rain (RA) is reported in the observation, and no other braking action reports are indicated, select WET-GOOD.

Note: This selection is independent of visibility.

- Select landing flaps.

It is Southwest Airlines policy to land with Flaps 30, where applicable. Flap 40 landings are strongly recommended in the following situations:

- OPC stopping margin under "Min(2)" is bracketed for Flaps 30 - Example: [-240].

- Reported braking action is less than "GOOD."

- Weather is at or near minimums for the approach to be flown.

Notes:

- The Flightcrew may wish to modify the landing flap selection based on the stopping margin results of the Landing Output screen.
- Landing performance limits or non-normal conditions may require the use of less than flaps 30 or 40.

- Select HUD/AIII, if required.

If planning to fly an approach to landing using HGS AIII guidance, select the HUD/AIII toggle. This applies for both required (low visibility) and practice approaches.

This selection will increase the computed landing distance (Approx Landing Dist) by 1000 feet.

- Select RVR < 4000, if required.

If the RVR is less than 4000 feet or the visibility is below 3/4 mile, select the RVR < 4000 toggle. Do not make this selection if the visibility is greater than 4000 RVR or 3/4 of a mile regardless of runway surface conditions.

OpSpec: Pilots are not authorized to begin an approach to a runway with less than 3/4 mile or 4000 feet RVR if the actual landing weight is greater than the wet runway landing weight.

There are two situations where the FARs require an additional 15% above the dry runway landing field length. One is when the destination runway is known or forecast to be wet. This will be checked by the Dispatcher and is a function of the OPC Dispatch Landing Performance module only. The second situation is when the RVR is less than 4000 feet or the visibility is less than 3/4 of a mile. In this case, the Flightcrew is responsible for determining that the required additional landing field length is available.

Selecting the RVR < 4000 toggle ensures that the FAR landing distance field length requirement for a low visibility approach is met. Selecting the RVR < 4000 toggle will not increase the OPC "Approx Landing Dist." However, if the OPC determines that the available landing field length is less than 115% of the dry landing field length, "[RWY]" will be displayed in lieu of the "Approx Landing Dist." If this is the case, landing is not allowed on the selected runway.

Note: This selection is independent of runway conditions.

- Enter the Landing Weight.

Subtract remaining fuel burn from actual aircraft weight displayed on CDU – PROGRESS Page 1. Input the value in the OPC "Wgts" block.

- Select an Air Conditioning option, if required.

Select BLEEDS ON or BLEEDS OFF.

- Select an Anti-ice option, if required.

If enroute icing was encountered and the forecast landing temperature is below 10°C (**-300/-500**: 8°C) or the use of anti-ice is anticipated for landing, select the appropriate configuration. If anti-icing was used or icing was encountered any time prior to the approach, select ENROUTE ICING ONLY.

If expecting to use anti-icing during the approach, select ENGINE - ON or ENGINE & WING – ON.

Any selection other than OFF applies an enroute icing penalty to the maximum approach climb weight calculation.

- Evaluate the Landing Output screen.

The choice of landing runway should be based on factors such as stopping margin, runway condition, crosswind component, and runway length. ATC assigned runways may not always be the best choice. Flightcrews should evaluate all relevant factors and make a prudent decision.

- Highlight the anticipated landing runway on the Landing Output screen.

This action completes the computation for V_{TARGET} and Quick Turn weight and triggers the OPC to provide the "Auto brakes required" message when appropriate.

Requirements for Landing

(CA) Do not continue toward any airport if, in the Captain's or Dispatcher's opinion, the flight cannot be completed safely. If the Captain believes there is no safer procedure, exercise emergency authority and continue toward that airport.

Southwest Airlines is not authorized for Land and Hold Short Operations (LAHSO) at any airport.

Any time ATC offers LAHSO operations, state, 'Southwest ____ is not authorized for LAHSO operations.'

Landing is not authorized under the following weather and lighting conditions:

- Limit HGS use to 25-knot maximum headwind any time HGS is required (approaches below 1800 RVR or Special CAT I approaches below 2400 RVR).

Note: The OPC does not highlight this headwind limitation.

- Weather conditions are below FAA established landing minima.

Maximum recommended wind velocity for landing is 50 knots steady and 70 knots peak gusts. Gust velocities and directions are advisory; however, operations with steady wind components at or near 35 knots accompanied by higher gusts require careful evaluation of runway surface conditions and width to ensure the safety of the operation.

- During night operations, when all runway lights (edge, centerline, etc.) are inoperative.

Landing is permitted with partial runway lighting if the CA determines there is adequate lighting to permit a safe landing. In all cases, FAA approved temporary lighting may be substituted for portions of normal lights, provided corresponding minima reductions are applied.

- Greater than light freezing rain at the airport.

The precipitation intensity stated in weather reports (ACARS, AWOS, ASOS, ATIS, or from weather briefer, etc.) or when received from an ATC controller is "moderate" unless it is modified by "light (-)" or "heavy (+)." The exceptions to this are ice crystals and hail. Ice crystals and hail do not receive modifiers. Freezing is a description that is added to further amplify types of weather such as precipitation or obscurations and is defined as:

- When freezing fog is occurring and the temperature is below 0°C.

- When drizzle and/or rain freezes upon impact and forms a glaze on the ground or other exposed objects.

- Known or probable severe icing conditions.

A combination of forecasts, PIREPs, aircraft types, times, locations, and altitudes must be considered. No aircraft will be dispatched, enroute operations continued, or a landing attempted when in the opinion of the CA and/or Dispatcher icing conditions exist or are anticipated which might adversely affect the safety of the flight.

Flights may be dispatched into light to moderate icing conditions only if all deicing equipment for the aircraft is in operable condition.

- Known or probable severe turbulence.

A combination of forecasts, PIREPs, aircraft types, times, locations, and altitudes must be considered.

- Water or slush greater than 1 inch on runway.

Slush is snow mixed with water.

- Wet snow greater than 2 inches on runway.

Snow is considered wet if it can be compacted easily by hand.

- Dry snow greater than 6 inches on runway.

Snow is considered dry if it cannot be compacted easily by hand.

- Braking action reported as "NIL."

Landings will not be attempted if braking action on any portion of the runway is reported "NIL" by air carrier jet aircraft. Friction measuring device values (Tapley or Mu-meter) should be used in conjunction with air carrier jet braking action reports.

If the airport is reporting some taxiway or ramp portions as "NIL," it is acceptable to taxi or be towed on portions that are reported better than "NIL."

- Either thrust reverser is inoperative and the runway is contaminated with clutter or the braking action is less than "GOOD."

Landing is not recommended if the plowed or usable runway width is less than 100 feet.

- New Hire Pilot Landing Restrictions: During an FO's first 100 hours, unless flying with a Check Pilot, FARs require that the CA will Land in the following conditions:

- The FAA designates the airport as a "Special Airport" (indicated by the OPC or *Jeppesen* Special Airport qualification charts).
- Prevailing visibility is at or below 3/4 mile or RVR is at or below 4000 feet.
- Runway has water, snow, slush, or similar conditions that may adversely affect aircraft performance.
- Braking action is reported to be less than "GOOD."
- Crosswind is greater than 15 knots.
- Windshear is reported in the vicinity of the airport.
- Any other condition where the CA deems it necessary to conduct the landing.

Regardless of the FO's experience level, the CA will land under the following conditions:

- An engine is shutdown.

- Visibility is below 3/4 mile or 4000 RVR.

OPC Review for Landing

(PF) Review the OPC for landing performance.

- Confirm that the arrival weight remains within maximum landing limits. Unless required by an emergency situation, do not land in excess of the landing performance limits computed by the OPC.

The OPC will generate landing performance data for an overweight landing and a flashing [OVERWGT] warning will appear on the Landing Output screen. Do not land overweight unless operationally necessary, and then only under the provisions of the Captain's emergency authority.

With a flashing [OVERWGT] for "App Clb" limit, recompute the landing performance using:

- A lesser flap setting,

- A Bleeds-Off configuration

If clutter exists, observe the 20 knot crosswind limit. A clutter condition cannot be entered in the OPC Landing Performance module.

- Evaluate maximum quick turnaround weight for all Flap 15 landings, tailwind landings, and high elevation airports.

If the OPC displays a reverse video "B" next to the runway number, investigate other runways and slower landing speeds to avoid exceeding maximum quick turnaround restrictions.

If the actual landing weight exceeds the maximum quick turnaround weight, then the aircraft must wait a minimum of 62 minutes (**-300/-500**: 53 minutes) at the gate (or parking area) with the parking brake released, or Maintenance must measure the brake temperatures and waive the cooling time. If unable to avoid landing above the maximum quick turnaround weight, call the station early to coordinate brake temperature measurement.

- Select auto brakes, as required.

If the Min(2) stopping margin for the selected runway is less than 500 feet and the runway is not DRY, auto brakes, if operational, will be used. Determine the lowest auto brake level that results in a stopping margin of 500 feet or more (found in the Med(3) or Max(M) column), and then select the corresponding setting (3 or Max) on the auto brake select switch. If neither setting results in a stopping margin of 500 feet or more, landing is still authorized using Max, provided a positive stopping margin is computed.

In all other situations, auto brake use is at the Pilot's discretion. Auto brakes may be beneficial for the following conditions:

- Landing in strong/gusty crosswinds or landing with a condition (such as one engine inoperative or a thrust reverser inoperative) where uniform brake application due to rudder inputs may be affected.

- Landing from a Cat IIIA approach.

- Non-normal landing configurations resulting in higher than normal approach speeds.

If auto brakes are used at the Pilot's discretion, use the lowest auto brake setting that results in a stopping margin of 500 feet or more. With discretionary use of auto brakes, use of level 2 may be an option if the Min(2) stopping margin is 500 feet or more. Auto brake level 1 use is not authorized due to lack of OPC computed stopping margin for this setting.

Note: Auto brake level 2 equates to Min braking, level 3 to Med, and Max to Max.

OPC Inoperative Procedures

If the OPC is inoperative, use any of the following to determine landing data:

- The appropriate performance tables in the "Performance" chapter.

- The Dispatch Release computed landing limitations. The Dispatch Release does not consider crosswind limitations and will not provide "Approx Landing Dist" data.

If the visibility is below 3/4 mile or the RVR is less than 4000 feet, the OpSpec requirement for increased landing field length will be met for a Flaps 30 or Flaps 40 maximum structural weight landing. This is true provided the runway length is 6500 feet or greater, all aircraft systems are operating normally, and no tailwind condition exists. In this case, no further calculations are required to meet the OpSpec requirement.

If a wet runway landing ATOG is shown on the Dispatch Release, this weight may also be used to ensure the low visibility OpSpec requirement is met. Subtract the total flight plan enroute fuel burn from the wet runway landing ATOG. The resulting number is the planned maximum landing weight for the planned runway when the visibility is below 3/4 mile or the RVR is less than 4000 feet.

- Acquire Dispatch-computed landing data via radio or ACARS if the runway available is less than 6500 feet and:

  The Dispatch Release was computed based on a dry landing weight, or

  The aircraft weight exceeds the Dispatch Release planned wet runway landing weight.

  Note: Provide Dispatch with the current ATIS, landing runway, flap setting, and expected landing weight. Dispatch will compute the new wet runway landing weight.

Setting Approach Speeds

Set V_{REF} and V_{TARGET} speeds.

Check the FMC-computed flap V_{REF} and compare it with the OPC-computed speeds. Generally, they should be within 1-2 knots (due to difference between the present weight and predicted landing weight). If they are significantly different, investigate the cause.

Set V_{TARGET}: Set the OPC-computed approach target speed (V_{TARGET}) with the airspeed cursor through the MCP.

Set V_{REF}: To set a corrected V_{REF}, type the desired speed in the scratchpad, then line select the appropriate flap setting reference line. The selected FMC value on the CDU APPROACH REF page generates an "R" for V_{REF} on the MASI airspeed scale. (**-300/-500**) Position an airspeed reference marker (bug) to indicate the OPC-computed V_{REF} speed.

Note: Positioning of additional reference markers (bugs) is at the discretion of the Pilot.

(CA) If an HGS approach is planned or the HGS will be used during descent, setting V_{TARGET} may be delayed until the final flaps are set.

If airframe icing is anticipated, add 10 knots to the final approach airspeed to ensure adequate maneuvering capability. The combined airspeed corrections for steady wind, gusts, and icing should not exceed the 20 knot maximum. When below 300 feet, reduce airspeed to V_{TARGET}.

The OPC will compute the wind corrected V_{TARGET} speed. If the OPC is unavailable, use the following method to compute V_{TARGET}.

- An HGS malfunction occurs during an HGS approach and adequate runway visual references have not been established.

- An APCH WARN or HGS FAIL occurs and the CA does not have the runway in sight. “Runway in sight” means the actual runway is in sight, not just part of the runway environment, such as lead-in lights or other approach lights.

- Either Pilot directs a go-around.

- ATC directs a go-around.

DIVERSION PLAN: Dispatch Diversion Plan to Flightcrew
Sent by Dispatch to the Flightcrew. The Captain will either accept or reject the Diversion Plan. If the Diversion Plan is accepted, all changes must be annotated on the written Release. If the Diversion Plan is rejected, the Captain will use the Diversion Plan Reject page to send the reason for the rejection. The Dispatcher will then send a new Diversion Plan to be considered.

Dispatch Weather Report to Flightcrew
Automatic response to a WEATHER REQUEST. Dispatch has access to the same weather information.

Field Condition Response
Automatic response to a Field Condition Request. A Field Condition Response returns a station's latest Field Condition Report, which lists ramp, runway, and taxiway information. Dispatch has access to the same Field Condition information.

Downlink Messages

Downlink messages are defined as any message originating from the aircraft. The following downlink messages may be initiated by the Flightcrew or automatically initiated by the aircraft.

FREE TEXT: Flightcrew Free Text to Dispatch
Sent by the Flightcrew to the Dispatcher. This message may contain any information deemed appropriate by the Flightcrew.

VOX CONTACT: Flightcrew Voice Contact Request to Dispatch
Sent by the Flightcrew to the Dispatcher. This message is a request for the Dispatcher to contact the Flightcrew on company frequency.

Enter the 3-letter identifier for the desired company station and then press send. After this message is sent, tune the VHF #2 radio to the desired company station frequency and monitor. Dispatch will contact the Flightcrew using the company frequency for this station.

DIVERSION PLAN: ACCEPT
Sent by the Captain to Dispatch. This message is sent to accept the proposed Diversion Plan.

All changes in the Diversion Plan must be annotated on the written Release.

DIVERSION PLAN: REJECT
Sent by the Captain to Dispatch.

This will access the Diversion Plan Reject page. Use the free text prompts to enter the reason for the rejection and then press SEND. The Dispatcher will then send a new Diversion Plan to be considered.

DIVERSION RPT: Flightcrew Diversion Report to Dispatch

Sent by the Flightcrew to the Dispatcher. This message is used to notify Dispatch that the flight is diverting to an alternate airport.

Enter the 3-letter airport identifier, ETA, estimated arrival fuel, and appropriate free text remarks. Press SEND.

A Diversion Report will be sent to Dispatch when time permits. Circumstances may arise when a Diversion Plan is not received prior to a diversion and the sending of a Diversion Report.

REROUTE RPT: Flightcrew Re-Route Report to Dispatch

Sent by the Flightcrew to the Dispatcher. This message is used to notify Dispatch that ATC has assigned a routing that is significantly different than the filed Flight Plan.

Enter the new routing, select reason, ETA, estimated arrival fuel and appropriate free text remarks. Press SEND.

HOLDING REPORT: Flightcrew Holding Report to Dispatch

Sent by the Flightcrew to the Dispatcher, Crew Scheduler, and Ground Ops when the aircraft enters a holding pattern.

Enter the holding fix, altitude, EFC, and appropriate free text remarks. Press SEND.

ADVISORY RPT: Flightcrew Advisory Report to Dispatch

Sent by the Flightcrew to the Dispatcher. This message is used to advise Dispatch of position and required advisory information.

Enter location and any appropriate free text remarks. Press SEND.

Advisory Information

Stop Margins

These charts provide approximate stop margins based on minimum (MIN), medium (MED), and maximum (MAX) braking effort on a DRY runway in addition to the maximum braking distance for a WET runway with FAIR braking action reported. These distances include an air distance of 1500 feet from 50 feet over the runway threshold to touchdown.

Non-normal Configuration Stop Margins

Information is provided to support non-normal configurations that affect landing performance of the airplane. Add the weight correction shown to the actual weight and enter the required chart with the corrected weight to obtain approximate stop margins.

Brake Cooling Schedule

Advisory information is provided to assist in avoiding problems associated with hot brakes. Application of the cooling procedures shown will avoid brake overheat and fuse plug problems that could result from a rejected takeoff. This advisory information is based on maximum braking. Consideration is required for all rejected takeoffs and for all landings for which the maximum quick turn weight has been exceeded. For landings, use the greater of the maximum quick turn time or the brake cooling schedule time.

To determine the recommended cooling time, correct the speed at which the brakes are first applied by adding one half of the headwind component, or 1.5 times the tailwind component. Enter the Reference Brake Energy chart at the pressure altitude, OAT, and aircraft weight using the corrected brakes on speed to determine the reference brake energy. Enter the Corrected Brake Energy Per Brake chart with reference brake energy to determine either the RTO or landing brake energy level. Finally, enter the Cooling Time chart with the corrected brake energy to determine the recommended parked cooling time.

Bulletin 16-05

To: All Pilots
From: Greg Crum, V.P. of Flight Operations
Date: August 9, 2005
Subject: Electronic Weight and Balance (EWB)

This bulletin replaces and cancels FOM Bulletin 04-15, "Electronic Weight and Balance." Please mark Bulletin 04-15 as cancelled in the Bulletin Matrix, and remove the bulletin from the *FOM*.

This is a one-part bulletin consisting of eight white pages. The white pages stay in the bulletin section of the *FOM*.

FAA Mandated Changes to the Weight and Balance Program

NTSB findings from the January 8, 2003 crash of an Air Midwest commuter aircraft in Charlotte, NC indicate a contributing factor to the crash was the improper documentation of weight (CG limits were exceeded) in the cargo hold of the aircraft. Based on those results, the FAA issued an Advisory Circular (AC) to all U.S. commercial carriers requiring two bag weights ("normal" and "heavy") be used in their respective weight and balance programs beginning August 11, 2005. According to the AC, a "normal" bag (weighing up to 50 lbs) must be accounted for as 30 lbs, and a "heavy" bag (weighing 51 to 100 lbs) must be accounted for as 60 lbs on the Operations Loading Schedule.

The following summarizes the FAA mandated changes to the Southwest Airlines Weight and Balance Program:

- Normal bag weight is considered 30 lbs for any checked bag weighing up to 50 lbs.
- Heavy bag weight is considered 60 lbs for any checked bag weighing more than 50 lbs and up to 100 lbs.
- Any bag weighing more than 100 lbs is considered cargo and must use the actual weight.
- Child weight is increased to 90 lbs.
- Fourth Crewmember weight is increased to 199 lbs.
- Increase of Flightcrew and Flight Attendant weights are included in the OEW.
- Both the EWB and manual Loading Schedules have been modified to show "STD Bags" and "Heavy Bags."
- First and second jumpseat observer adjusted weights remain unchanged.
- Balance Limits remain unchanged.

Updated OPC Loading Schedule Adjustments Screen

Effective August 4, 2005, all aircraft OPCs will have been updated with a new OPC Loading Schedule Adjustments screen. The changes to the screen reflect the changes to the revised EWB and manual Loading Schedules and include the following:

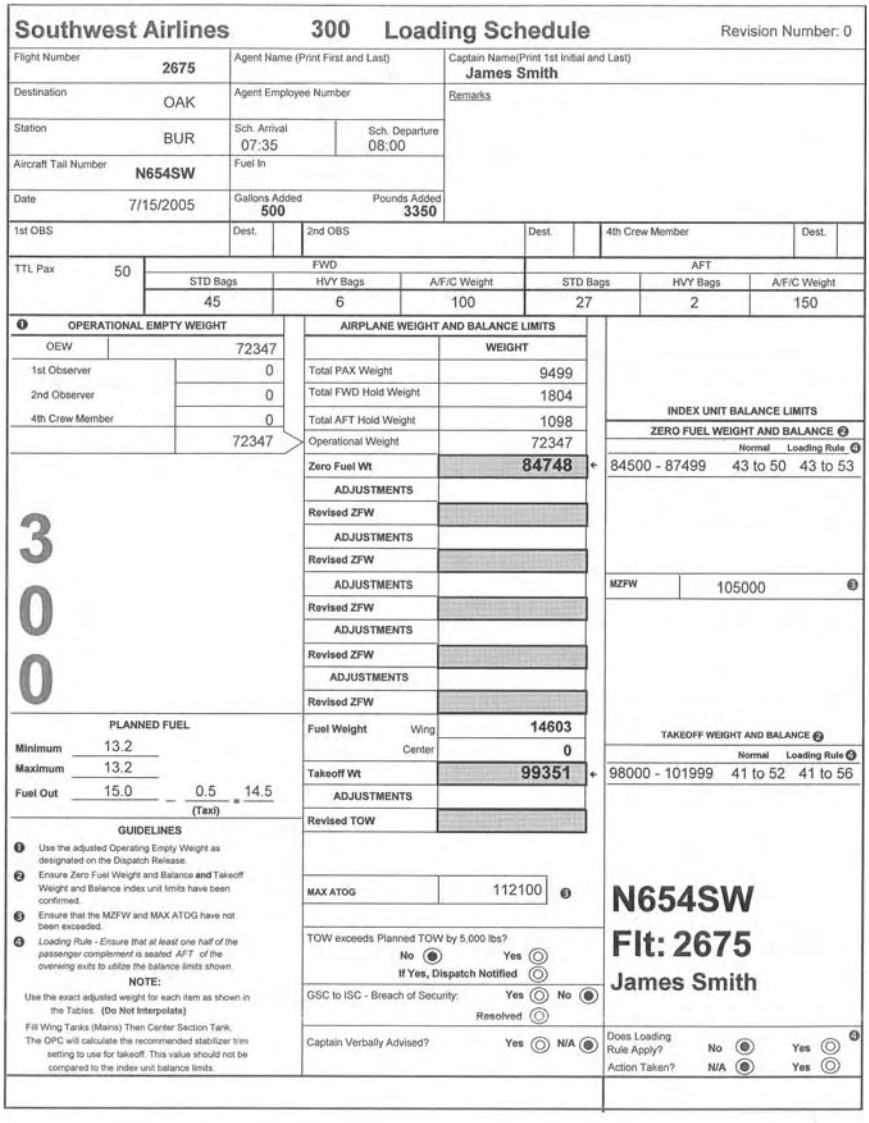
- Additional entries for heavy bags for both the FWD and AFT cargo bins
- Revised names for the existing FWD and AFT bag entries

Examples of the updated OPC Loading Schedule Adjustments screen and EWB Loading Schedule are included in this bulletin.

Electronic Weight and Balance

Although the basic layout of the EWB Loading Schedule remains the same as the manually generated Loading Schedule, changes and enhancements include the following:

- Adjusted Weight values are determined automatically.
- Arithmetic computations are accomplished by the computer.
- The Loading Schedule is electronically signed by the Operations Agent using password verification.
- Fuel added is automatically converted from gallons to pounds, simplifying the fuel audit process.
- Some administrative boxes used by the Operations Agent are removed.
- The EWB Loading Schedule is single-sided. The Bags column is divided to show the number of both standard (STD) and heavy (HVY) bags.



Southwest Airlines **300** **Loading Schedule** Revision Number: 0

Flight Number: 2675	Agent Name (Print First and Last)	Captain Name(Print 1st Initial and Last): James Smith	
Destination: OAK	Agent Employee Number	Remarks	
Station: BUR	Sch. Arrival: 07:35	Sch. Departure: 08:00	
Aircraft Tail Number: N654SW	Fuel In		
Date: 7/15/2005	Gallons Added: 500	Pounds Added: 3350	

1st OBS	Dest.	2nd OBS	Dest.	4th Crew Member	Dest.

TTL Pax	FWD			AFT		
	STD Bags	HVY Bags	A/F/C Weight	STD Bags	HVY Bags	A/F/C Weight
50	45	6	100	27	2	150

❶ OPERATIONAL EMPTY WEIGHT

OEW	72347
1st Observer	0
2nd Observer	0
4th Crew Member	0
	72347

AIRPLANE WEIGHT AND BALANCE LIMITS

	WEIGHT
Total PAX Weight	9499
Total FWD Hold Weight	1804
Total AFT Hold Weight	1098
Operational Weight	72347
Zero Fuel Wt	**84748** ←
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	

INDEX UNIT BALANCE LIMITS

ZERO FUEL WEIGHT AND BALANCE ❷

	Normal	Loading Rule ❹
84500 - 87499	43 to 50	43 to 53

MZFW	105000 ❸

TAKEOFF WEIGHT AND BALANCE ❷

	Normal	Loading Rule ❹
98000 - 101999	41 to 52	41 to 56

PLANNED FUEL

Minimum	13.2		
Maximum	13.2		
Fuel Out	15.0	0.5 (Taxi)	14.5

Fuel Weight	Wing	14603
	Center	0
Takeoff Wt		99351 ←
ADJUSTMENTS		
Revised TOW		

GUIDELINES

❶ Use the adjusted Operating Empty Weight as designated on the Dispatch Release.

❷ Ensure Zero Fuel Weight and Balance **and** Takeoff Weight and Balance index unit limits have been confirmed.

❸ Ensure that the MZFW and MAX ATOG have not been exceeded.

❹ *Loading Rule - Ensure that at least one half of the passenger complement is seated AFT of the overwing exits to utilize the balance limits shown.*

NOTE:

Use the exact adjusted weight for each item as shown in the Tables. **(Do Not Interpolate)**

Fill Wing Tanks (Mains) Then Center Section Tank.

The OPC will calculate the recommended stabilizer trim setting to use for takeoff. This value should not be compared to the index unit balance limits.

MAX ATOG	112100 ❸

TOW exceeds Planned TOW by 5,000 lbs? No ◉ Yes ○ If Yes, Dispatch Notified ○

GSC to ISC - Breach of Security: Yes ○ No ◉ Resolved ○

Captain Verbally Advised? Yes ○ N/A ◉

Does Loading Rule Apply? No ◉ Yes ○ ❹

Action Taken? N/A ◉ Yes ○

300

N654SW

Flt: 2675

James Smith

Example of an EWB Loading Schedule

Southwest Airlines — Loading Schedule — 300

Flight Number	Agent Name (Print First and Last)	Captain Name (Print 1st Initial and Last)	Wheelchair(s)-BYO Dest.
			#

Destination	Agent Employee Number	Infant Items to Jetbridge Dest.	Wheelchair(s) to Jetbridge Dest.
		#	#

Station	Sch. Arrival / Sch. Departure	Assistive Devices to Jetbridge Dest.	Remarks
		#	

Aircraft Tail Number	Fuel In	Unaccompanied Minors Dest.	
N		#	

Date	Gallons Added	Delay Code/Minutes	
/ /			

1st OBS	Dest.	MR SA	2nd OBS	Dest.	MR SA	4th Crew Member	Dest.	MR SA

Load Code	FWD Hold Bags/Weight: STD Bags	HVY Bags	A/F	C/M	A/M	TTL	AFT Hold Bags/Weight: STD Bags	HVY Bags	A/F	C/M	A/M	TTL
THRU												
LOCAL												
Thru Pax			X 2 =			Weight			X 2 =			Weight
TTL Pax		Bags				Equiv. Pieces		Bags				Equiv. Pieces
	TTL PCS						TTL PCS					

OPERATIONAL EMPTY WEIGHT

1. OEW
   - 1st Observer + 201
   - 2nd Observer + 201
   - 4th Crew Member + 199
   - ADJUSTMENT (+ON) (-OFF)
   - ADJUSTMENT (+ON) (-OFF)
   - ADJUSTMENT (+ON) (-OFF)

PLANNED FUEL

Minimum _____

Maximum _____

Fuel Out _____ — _____ = _____ (Taxi)

FINAL ADJUSTMENT (+ON) (-OFF)

AIRPLANE WEIGHT AND BALANCE LIMITS

	WEIGHT
Total PAX Weight	
Total FWD Hold Weight	
Total AFT Hold Weight	
Operational Weight	
Zero Fuel Wt	
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	
ADJUSTMENTS	
Revised ZFW	
Fuel Weight Wing	
Center	
Takeoff Wt	
ADJUSTMENTS	
Revised TOW	
MAX ATOG	3

TOW exceeds Planned TOW by 5,000 lbs?

No ◯ Yes ◯

If Yes, Dispatch Notified ◯

GSC to ISC - Breach of Security: Yes ◯ No ◯

Resolved ◯

Captain Verbally Advised? Yes ◯ N/A ◯

INDEX UNIT BALANCE LIMITS

ZERO FUEL WEIGHT AND BALANCE 2

	Normal	Loading Rule 4
Below - 72499	47	47 to 51
72500 - 77499	46 to 48	46 to 51
77500 - 80499	45 to 48	45 to 52
80500 - 84499	44 to 49	44 to 53
84500 - 87499	43 to 50	43 to 53
87500 - 90499	42 to 50	42 to 54
90500 - 93499	42 to 51	42 to 54
93500 - 95999	41 to 51	41 to 55
96000 - 97999	41 to 52	41 to 55
98000 -101999	41 to 52	41 to 56
102000 -103499	41 to 53	41 to 56
103500 - 105000	41 to 53	41 to 57
105001 - 106500	41 to 53	41 to 57

MZFW 3

TAKEOFF WEIGHT AND BALANCE 2

	Normal	Loading Rule 4
77500 - 80499	45 to 48	45 to 52
80500 - 84499	44 to 49	44 to 53
84500 - 87499	43 to 50	43 to 53
87500 - 90499	42 to 50	42 to 54
90500 - 93499	42 to 51	42 to 54
93500 - 95999	41 to 51	41 to 55
96000 - 97999	41 to 52	41 to 55
98000 -101999	41 to 52	41 to 56
102000 -103499	41 to 53	41 to 56
103500 -107499	41 to 53	41 to 57
107500 -108999	41 to 54	41 to 57
109000 -109999	41 to 54	41 to 58
110000 -111999	40 to 54	40 to 58
112000 -113499	40 to 55	40 to 58
113500 -114499	40 to 53	40 to 57
114500 -118999	40 to 52	40 to 56
119000 -122499	40 to 51	40 to 55
122500 -125499	40 to 50	40 to 54
125500 -128499	40 to 49	40 to 53
128500 -130499	40 to 48	40 to 52
130500 -131999	40 to 47	40 to 51
132000 -133999	41 to 47	41 to 51
134000 -134999	42 to 47	42 to 51
135000 -135999	43 to 47	43 to 50
136000 -136499	44 to 46	44 to 50
136500 -137500	45 to 46	45 to 50
137501 -137999		46 to 49
138000 -138500		47 to 49
138501 -139000		48 to 49

Does Loading Rule Apply? No ◯ Yes ◯ 4

Action Taken? N/A ◯ Yes ◯

GUIDELINES

1. Use the adjusted Operating Empty Weight as designated on the Dispatch Release.
2. Ensure Zero Fuel Weight and Balance **and** Takeoff Weight and Balance index unit limits have been confirmed.
3. Ensure that the MZFW and MAX ATOG have not been exceeded.
4. *Loading Rule - Ensure that at least one half of the passenger complement is seated AFT of the overwing exits to utilize the balance limits shown.*

NOTE:

- Use the exact adjusted weight for each item as shown in the Tables. **(Do Not Interpolate)**
- Fill Wing Tanks (Mains) Then Center Section Tank.
- The OPC will calculate the recommended stabilizer trim setting to use for takeoff. This value should not be compared to the index unit balance limits.

Agent Full Signature

SWA WN 253 (Rev 7/05)

Example of a Manual Loading Schedule

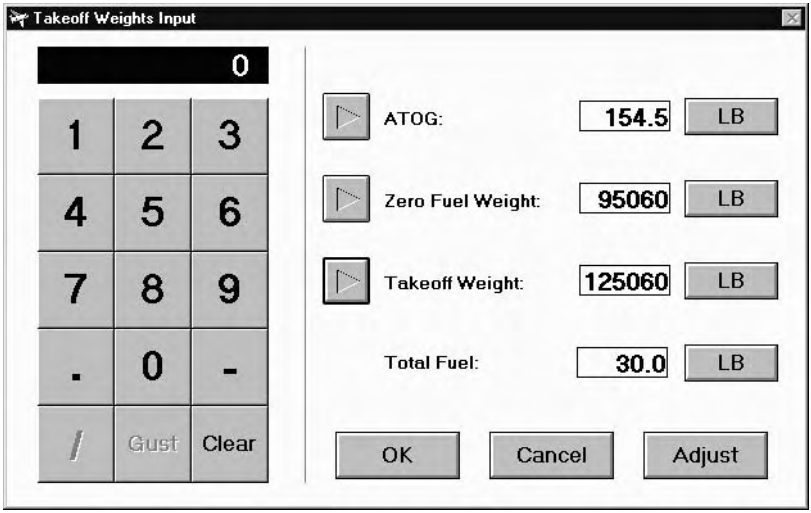
OPC Loading Schedule Adjustments

The index unit tables used for weight adjustments and printed on the back of the manually generated Loading Schedule are incorporated into the OPC through a new Loading Schedule Adjustments screen.

Note: Make all adjustments on the ground prior to takeoff.

Accessing the Loading Schedule Adjustments Screen

To access the Loading Schedule Adjustments screen, click the Adjust button on the Takeoff Weights Input screen after entering the original ZFW and TOW from the Loading Schedule.



Example of the Adjust Button on the Takeoff Weights Input Screen

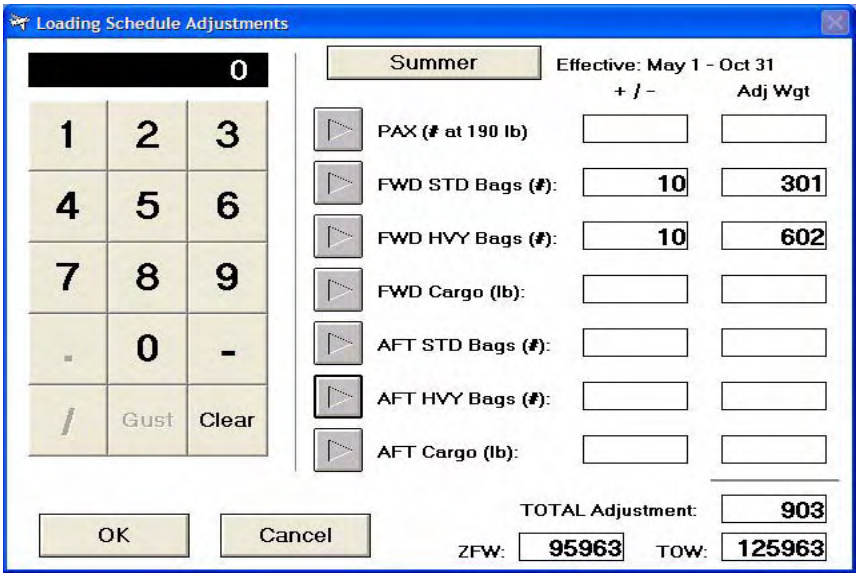
Using the Loading Schedule Adjustments Screen

Using the Loading Schedule Adjustments screen, changes can be made to cargo weights and the number of passengers and bags. Any other changes will require generating a new Loading Schedule.

To add passengers, bags, or weights, enter a positive number. To subtract passengers, bags, or weights, enter a negative number. Use the Transfer (Arrow) buttons to transfer values from the scratchpad to the applicable location boxes (clicking the location boxes to transfer values can cause errors). Weight adjustments will be totaled at the bottom of the screen and applied to both the ZFW and TOW.

The entered values are displayed in the left-hand column (+/-), and the calculated adjusted weight values are displayed in the right-hand column (Adj Wgt). A total of all adjustments displays at the bottom of the screen along with the newly calculated ZFW and TOW.

Validation of the new ZFW and TOW will occur when the OK button is pressed. If either the index unit limits or structural limits are exceeded, a warning message will be displayed and the OPC will not accept the adjustments.



Example of the OPC Loading Schedule Adjustments Screen

Entering Passenger and Bag Weight Adjustments

The Season button has four possible entries (Summer/Winter/Summer to Child/ Winter to Child) that are changed by clicking the button. This button indicates which weights are to be used for the passenger adjustment. The "Summer to Child" and "Winter to Child" options are only to be used to change a required number of passengers from full weight passengers to child weight passengers.

Child weight adjustments are accomplished by doing the following:

1. Click the Season button (Summer/Winter/Summer to Child/Winter to Child) until the applicable seasonal selection displays.
2. Enter the number of passengers as a negative number to convert to child weights and subtract the weight difference.
3. Click OK.

To move bags from one bin to another, subtract the bags from the bin from which they were removed (a negative value) and add the same number to the bin to which they were relocated.

The OPC Loading Schedule Adjustments screen should be used to make adjustments to both manual and EWB Loading Schedules. **When the OPC is used to make zero fuel weight adjustments, write the revised zero fuel weight on the Loading Schedule**.

Heavy and Standard Bags

Checked bags are now differentiated into two categories. Bags weighing up to 50 pounds are considered standard (STD) bags and have an average weight of 30 pounds each. Bags weighing 51 to 100 pounds are considered heavy (HVY) and have an average weight of 60 pounds each.

OPC Inoperative

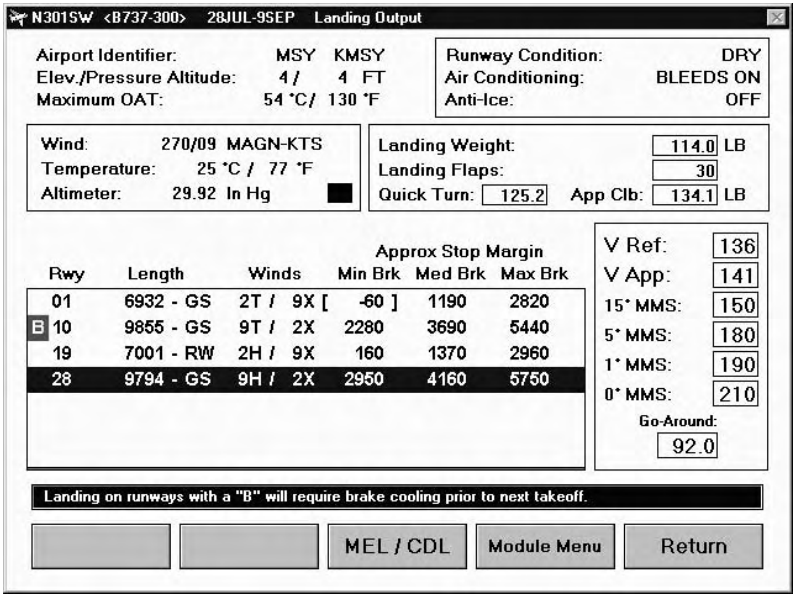
If the OPC is inoperative and adjustments are required, do one of the following:

- At the gate: The Ops Agent must print a new Loading Schedule and hand deliver it to the Flightcrew.
- After pushback: Station Operations must provide the new ZFW and TOW, and the Flightcrew must contact Dispatch for new Takeoff data calculations and V Speeds.

Landing Output Screen

In a continuing effort to improve the usefulness of the data that is calculated and presented by the OPC, the Approximate Landing Distances shown on the Landing Output screen display approximate stopping margins. The landing stopping margin is defined as the difference between the calculated landing distance and the available runway length.

Bracketed distances appear when the stopping margin is negative for a given deceleration rate (i.e., the landing distance is longer than the available runway length). Flap selection policy remains unchanged (i.e., minimum braking bracketed indicates a Flap 40 recommended landing).



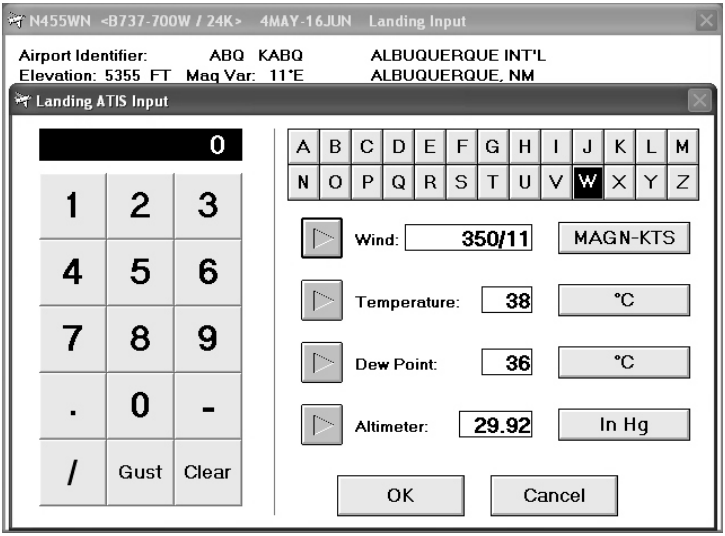
Example of the Landing Output Screen

Landing Performance Module

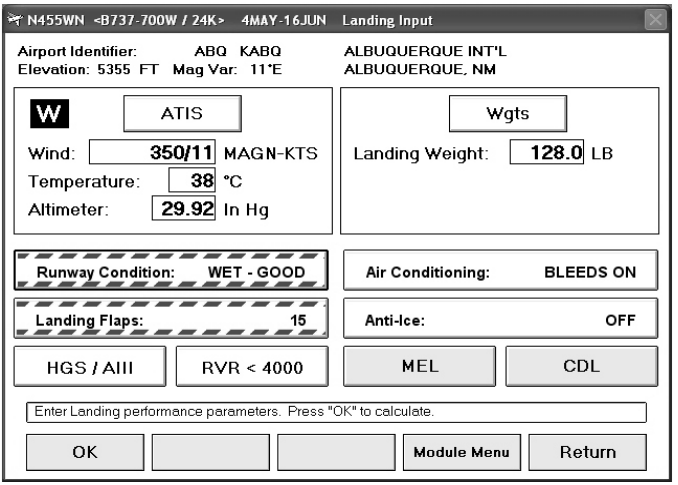
The Landing Performance module computes Stop Margin, speeds, and power settings for actual conditions.

Computing Landing Performance

1. From the Module Menu screen, select Landing Performance to display the Airport Directory screen.
2. Select the arrival airport, and click OK to display the Runway Directory screen.
3. Select the runways to consider for landing.
4. Enter NOTAM data.
5. Click OK to display the Landing ATIS Input screen.



6. Enter ATIS information (**-300/-500**: Dew Point not displayed/required). Click OK to return to the Landing Input screen.
7. Enter the Landing Weight:
   a. Click the Wgts button to display the Landing Weights Input screen.
   b. Enter the anticipated Landing Weight.
   c. Click OK to return to the Landing Input screen.

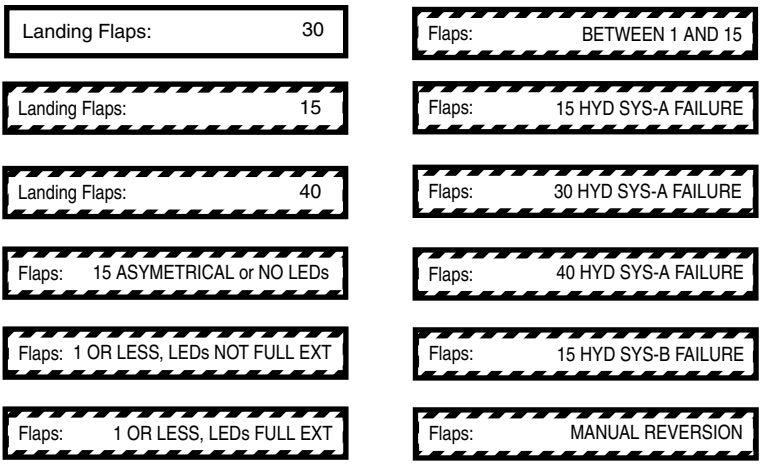


8. Select the anticipated runway condition and aircraft configuration.

   Click the appropriate buttons to toggle through options. Any time a toggle button displays anything other than the default configuration, the button is highlighted with hash-marks.

   Runway Condition—toggle to the reported runway condition. No “clutter” selections are available/required for landing.

   Landing Flaps—toggle to the appropriate flap setting (normal or non-normal).



HUD/AIII—click if the HGS AIII mode is used for landing (flare guidance). Hash-marks display on the button. When selected, the OPC ensures the Operations Specification increased landing distance requirement (controlled touchdown point) is met. This adds 1,000 feet to the landing distance, which corresponds to 1,000 feet less Approximate Stop Margin.

RVR < 4000—click if the RVR is less than 4000 feet, or visibility is less than 3/4 mile. Hash-marks display on the button. When selected, the OPC ensures the Operations Specification wet runway landing distance requirement is met.

Note: If landing distance requirements cannot be met for the HUD or RVR, a limit code of "RWY" displays in lieu of Stop Margins for the effected runways.

Air Conditioning—toggle to the appropriate setting.

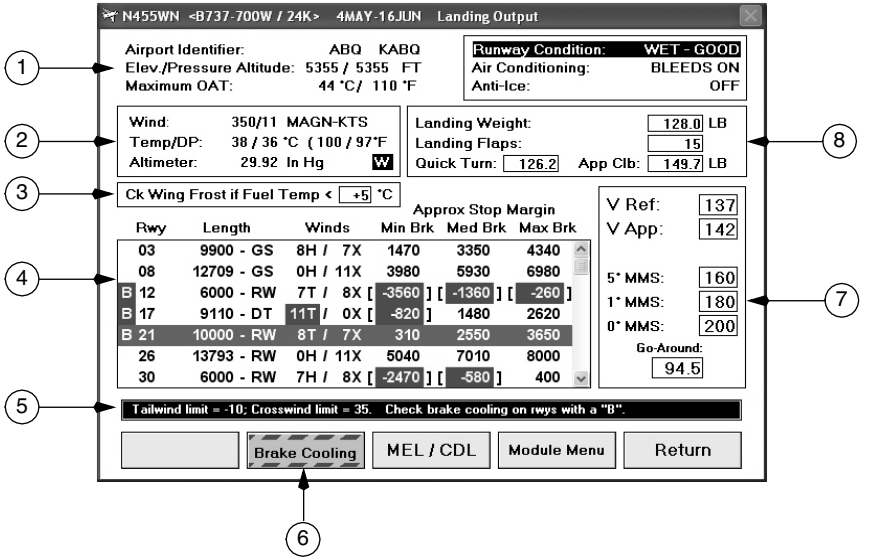
Anti-ice—select the appropriate configuration if enroute icing is encountered and the forecast landing temperature is below 10°C (**-300/-500**: 8°C) or if anti-ice use is anticipated at landing. "Anti-ice: Engine On" and "Anti-ice: Engine & Wing On" include the enroute icing penalty in the approach climb limit calculation.

$V_{REF\ ICE}$ (applies only to Flaps 15; **-300/-500**: N/A)—if any anti-ice selection is made, the OPC automatically adds 10 knots to V_{REF} and V_{TARGET} speeds. (This increase must be manually entered in the FMC.)

9. Click the MEL and CDL buttons to access performance related MEL and CDL items. The OPC retains all previously selected items.
10. Click OK to calculate the Stop Margins for the selected runways and display the Landing Output screen.

Landing Output Screen

The Landing Output screen displays landing parameters for entered conditions. When viewing landing data for multiple runways, select the desired landing runway to display the Quick Turn weight, approach speed (V_{REF} + wind additives), and Brake Cooling button (if applicable).



(1) Airport Landing Data

Displays pressure altitude, maximum allowable OAT, runway condition, bleeds configuration, and anti-ice configuration.

(2) ATIS Data

Displays ATIS data entered on the Landing ATIS Input screen.

(3) Check Wing Frost if Fuel Temp < __¡ C

Indicates the temperature below which cold-soaked fuel frost may form on the wing **(-300/-500**: N/A).

(4) Runway Data

Displays the following for each runway:

- Runway Length—length available for landing. To the right of the length is a two-letter code that indicates the basis for the landing length. Three codes are possible:

  RW—available runway length

  DT—displaced threshold landing distance

  GS—glideslope runway intercept distance plus 1000 feet

  If a runway is Quick Turnaround Weight limited, a highlighted "B" prefix displays to the left of the runway identifier.

- Winds—actual wind speed components. If a tailwind or crosswind component exceeds the corresponding limit, the actual component is highlighted and landing distances are based on the limit, not the actual. Limits display on the Information Line (IL) if the entered wind exceeds these limits.

  If runway conditions are WET-FAIR, the tailwind and crosswind limits are -10 knots and 15 knots. For WET-POOR, the limits are -5 knots and 10 knots.

- Approximate Stop Margin—based on minimum, medium, and maximum braking and corresponds to three different levels of deceleration. Each Stop Margin includes 1500 feet of air distance from threshold to touchdown. Stop Margin is the distance remaining after the aircraft comes to a complete stop, measured from the nose gear to the end of the available runway. If the estimated landing distance is longer than the available runway length, the approximate Stop Margin is negative, highlighted, and bracketed "[ ]."

(5) **Information Line (IL)**

Displays tailwind and crosswind limits, if applicable.

(6) **Brake Cooling button (displays if Max Quick Turn Weight exceeded)**

Click—displays the Brake Cooling Schedule screen for calculating brake cooling requirements. The Brake Cooling Schedule screen defaults to display Brakes on Speed of 80 knots, calculated wind component, and 1.5 NM taxi distance (representing the distance from runway to gate). Changing these values will yield new parked cooling times. Parked cooling times are required (FAR) unless the Max Quick Turnaround Weight Alternate Procedure in the *FOM* applies.

(7) **V-speeds**

Displays all data when viewing a single runway. When viewing multiple runways, $V_{REF,}$ flap extension speeds and Go-Around power display. Select the desired landing runway to display the Quick Turn weight and approach speed (V_{REF} + wind additives).

(8) **Landing Data**

Displays the following:

- Landing Weight—displays a flashing "[OVERWGT]" label if the landing weight entered exceeds either the maximum certified landing weight or the Max Approach Climb Weight.
- Landing Flaps—flap setting entered on the Landing Input screen.
- Quick Turn—quick turnaround weight; displays when viewing landing data for a single runway. Each runway is checked for Max Quick Turn limits. If a runway is limited by Max Quick Turn requirements, a highlighted "B" displays to the left of the runway identifier.
- App Clb—Maximum Approach Climb Limit Weight.

Landing Performance

The Landing module provides advisory landing distance information for both normal and abnormal flap configurations. In addition, it provides go-around climb performance and maximum quick turn limitations and determines if there is a landing restriction due to a low RVR.

Approximate Stopping Margin

The Stopping Margins are based on the stopping distances provided in the AFM for minimum, medium, and maximum autobrake settings. An increment of 1500 feet is added to account for the distance required to cross the threshold at 50 feet, flare, and touchdown. Since the AFM autobrake data are provided as guidance material and since the air distance is based on operational experience, the total distances calculated and displayed by the Onboard Performance Computer are approximate. It is important to note that there are no conservative pads provided in these distances; therefore, any touchdown beyond 1500 feet from the runway threshold will cause a corresponding increase in the total landing distance. The distance for MAX braking is based on maximum manual braking at touchdown without the use of thrust reversers.

Dispatch Landing Performance

Compliance with Dispatch landing performance requirements must be demonstrated prior to takeoff. An aircraft is not permitted to depart if its anticipated weight upon arrival at the landing airport is greater than that weight that satisfies the field length and climb requirements described below. The predicted enroute fuel burn is added to the computed maximum allowable landing weight to establish a landing performance-limited takeoff weight. This calculation is normally performed by the aircraft Dispatcher, and the result is presented on the Flight Release as the allowable takeoff gross weight (ATOG). The ATOG must be entered into the Onboard Performance Computer for the Dispatch landing requirements to be properly considered when computing the maximum allowable takeoff weight.