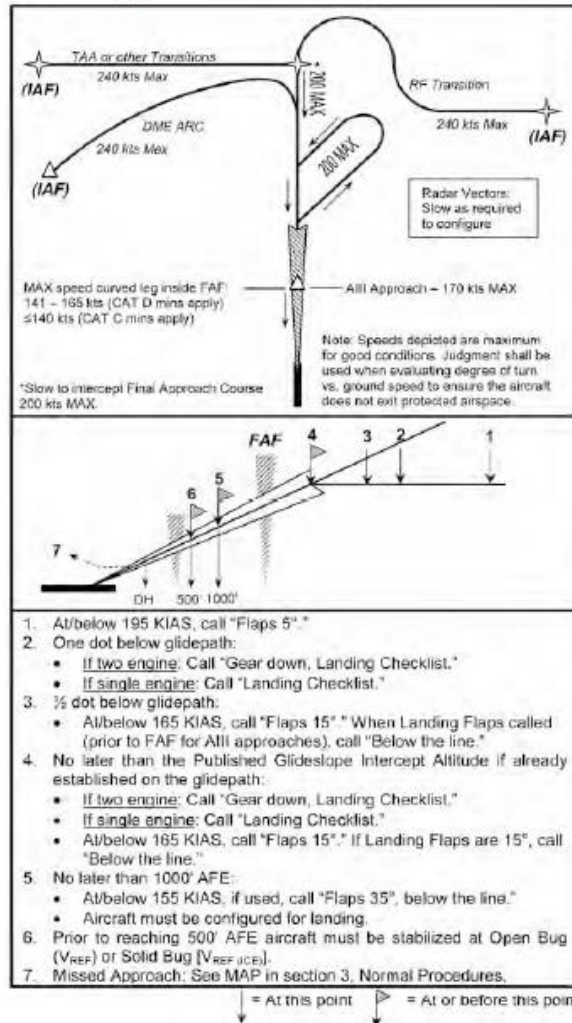


Factual Report – Attachment 11
Horizon Air Q400 RNAV Approach Profile

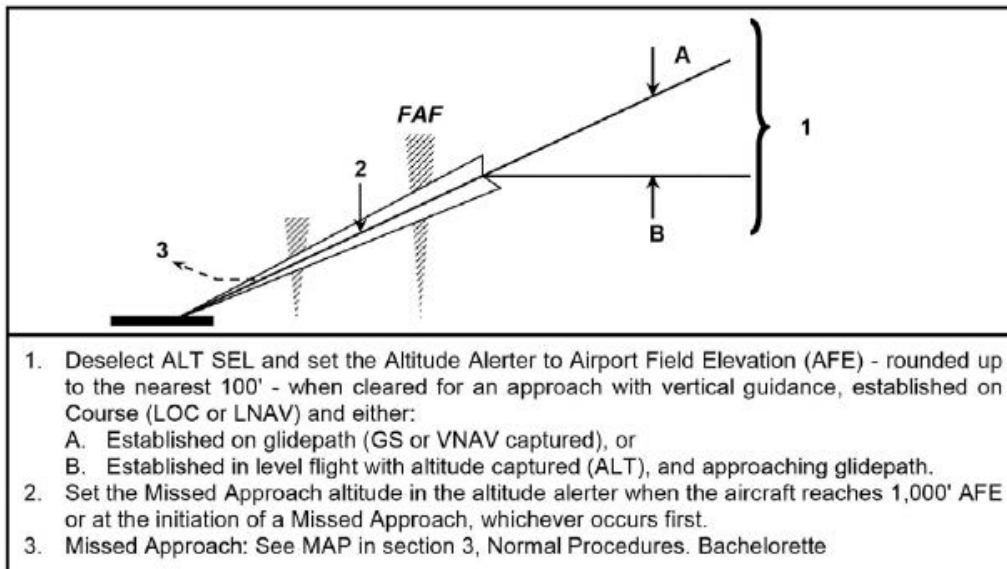
OPERATIONAL FACTORS/HUMAN PERFORMANCE

DCA18IA081

Approach With Vertical Guidance



Altitude Alerter Approach With Vertical Guidance



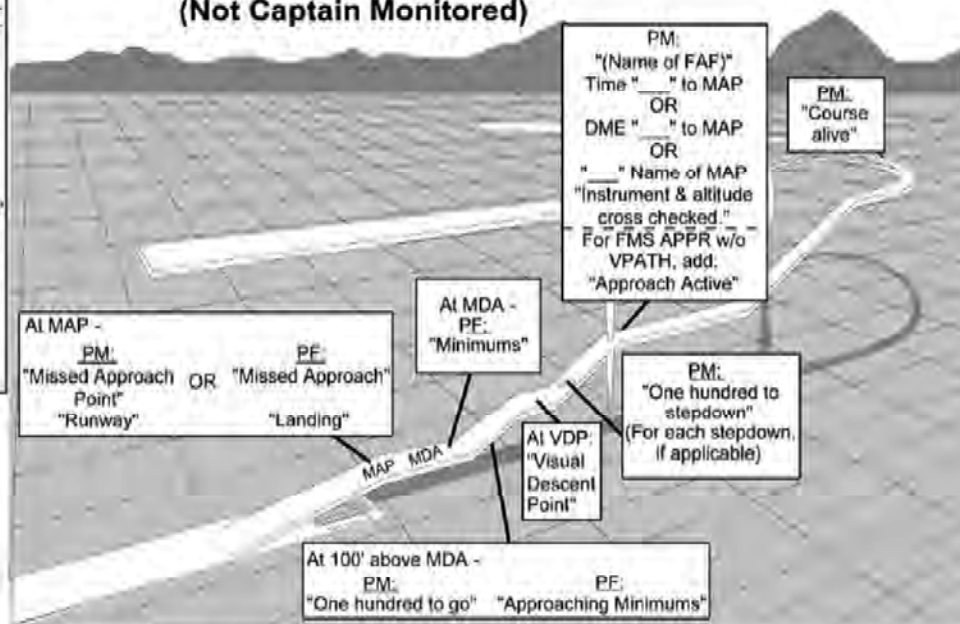
Non-Precision Straight-In Approach (Not Captain Monitored)

NON-PRECISION STRAIGHT-IN APPROACH (Not Captain Monitored)

CONDITION	CALLOUT
First positive inward motion of the CDI or within 10° of course using the RMI	"Course alive"
Course deviations of more than one dot	"Course"
Airspeed deviations from Target of -5 or +10 knots	"Airspeed"
At MDA, altitude deviations of -0' +50'	"Altitude"
Reaching a published visual descent point (if applicable)	"Visual descent point"

NOTE 1:
If the pilot-not-flying sees the runway environment will be continuously in view, he will so state what is seen, example: "Strobes", "Approach lights", "Runway."

NOTE 2:
If the pilot flying determines visual contact with the runway can be maintained and that standard altitude callouts are no longer desired, he will state "Landing." The absence of a "Landing" call will indicate standard callouts shall continue.



NOTE 3:
If the required runway visual references are not in sight upon reaching the published VDP (or a point from which a normal descent to landing can be made when no VDP is published), execute the missed approach.

FMS Approach with VPATH Except RNAV (RNP) (Captain Monitored)

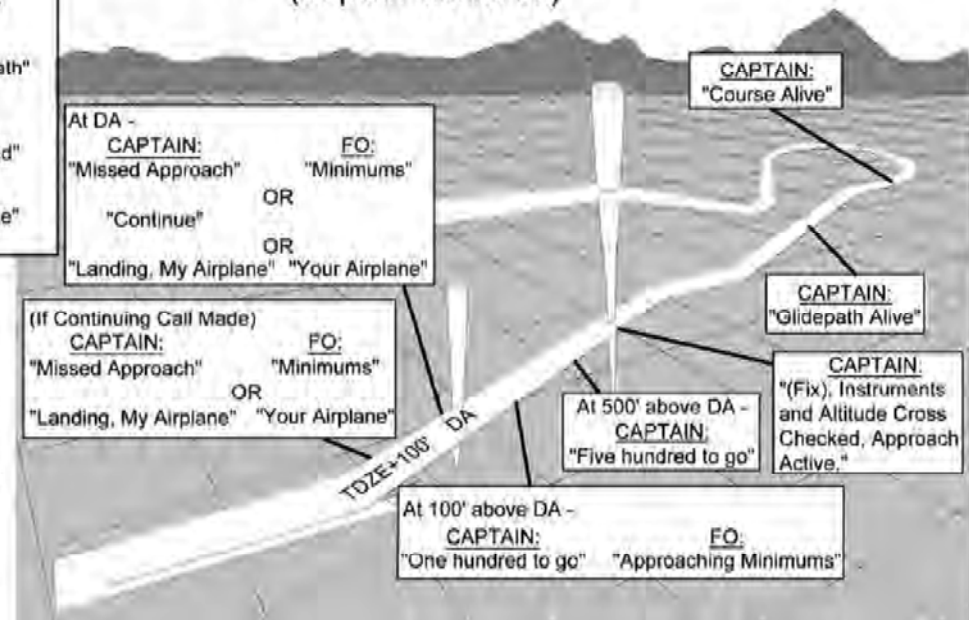
CONDITION	CALLOUT
First positive inward motion of the CDI	"Course alive"
First positive motion of VPATH Bar	"Glidepath alive"
Course deviations of more than one dot	"Course"
VPATH deviations of more than one dot above or 1/2 dot below	"Glidepath"
Airspeed deviations from Target of -5 or +10 knots	"Airspeed"
Sink rate in excess of 1,000 FPM	"Sink rate"

NOTE 1: When becoming aware the runway environment is in view and visual contact can be maintained, the Captain will state "Landing, My Airplane."

NOTE 2: If at 100 feet above the TDZE, a "Landing, My Airplane" or "Missed Approach" callout is not made, the First Officer will immediately execute a missed approach.

NOTE 3: For FMS Approach without VPATH, see Non-Precision Straight-In Approach (Captain Monitored).

FMS APPROACH WITH VPATH (Captain Monitored)



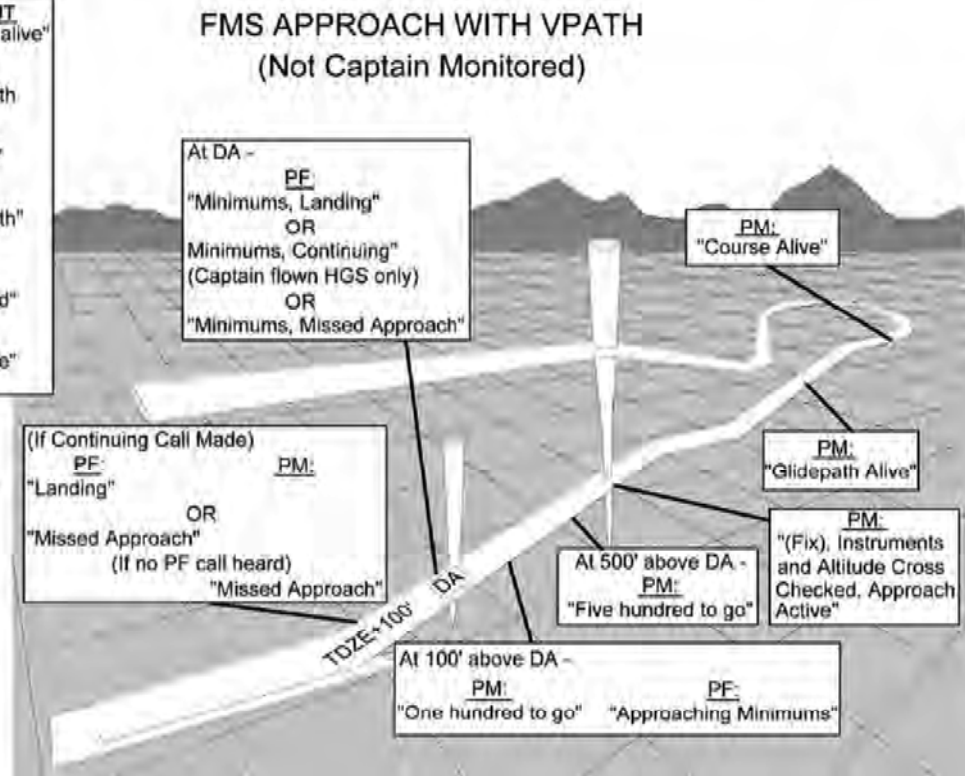
FMS Approach with VPATH Except RNAV (RNP) (Not Captain Monitored)

CONDITION	CALLOUT
First positive inward motion of the CDI	"Course alive"
First positive motion of VPATH Bar	"Glidepath alive"
Course deviations of more than one dot	"Course"
VPATH deviations of more than one dot above or 1/2 dot below	"Glidepath"
Airspeed deviations from Target of -5 or +10 knots	"Airspeed"
Sink rate in excess of 1,000 FPM	"Sink rate"

NOTE 1: The PM, when becoming aware the runway environment is in view, will state what is seen. (Example, "Strobes," "Approach lights," "Runway.")

NOTE 2: When it is determined visual contact with the runway can be maintained and standard callouts are no longer desired, the PF will state "Landing."

NOTE 3: For FMS Approach without VPATH, see Non-Precision Straight-In Approach (Not Captain Monitored).

**RNAV (RNP) Approach Profile**

Due to the reduced obstacle clearance for RNAV (RNP) approach procedures, close adherence to the depicted lateral and vertical track centerlines is required during these operations.

NOTE:

The profile and callouts depicted in this section apply only to RNAV (RNP) approaches. They do not apply to non-RNP approaches conducted via the FMS, such as: RNAV (GPS), GPS, LPV, LOC, BC, or overlays of VOR approaches, etc.

Track Deviation Monitoring

Flight crews are expected to maintain procedure centerlines depicted by lateral and vertical deviation indicators.

- **Lateral Deviation:** Lateral deviation for normal operations should be limited to ± 1 dot.
 - During an RNP approach, momentary full-scale lateral deviations are allowable under any of the following conditions or combination of the three:
 - During a course intercept.
 - During and immediately after waypoint crossing when there is a course change.
 - During and immediately after waypoint crossing when there is a reduction in RNP level (e.g., RNP 1.0 to RNP 0.10 at the label).
 - A missed approach is not required under the above conditions provided the flight crew can verify the aircraft is acquiring the new course in an acceptable manner through use of the MFD map display, digital XTK display (MFD and/or FMS CDU), CDI and ground track symbol (PFD), or any combination of these.
- **Vertical Deviation:** Vertical deviation for normal operations should be limited to $\pm 1/2$ dot during the final approach segment (FAF to MAP). Momentary vertical deviations up to 75 feet above or below glidepath ($3/4$ dot) are allowable.

- **Missed Approach:** Unless the visual references required to continue to the intended runway have been acquired, a missed approach shall be initiated if:
 - Lateral deviation is at full scale and the conditions stated above are not met; or,
 - Vertical deviation during the final approach segment (FAF to MAP) exceeds 75 feet ($\frac{3}{4}$ dot).

RNP Approach (Captain Monitored)

CONDITION	CALLOUT
First positive inward motion of the CDI	"Course alive"
First positive motion of VPATH Bar	"Glidepath alive"
Course deviations of more than one dot	"Course"
Glidepath deviations of more than $\frac{1}{2}$ dot	"Glidepath"
Glidepath deviations of more than 75 ft ($\frac{3}{4}$ dot)	"Missed approach"
Airspeed deviations from Target of -5 or +10 knots	"Airspeed"
Sink rate in excess of 1,000 FPM	"Sink rate"

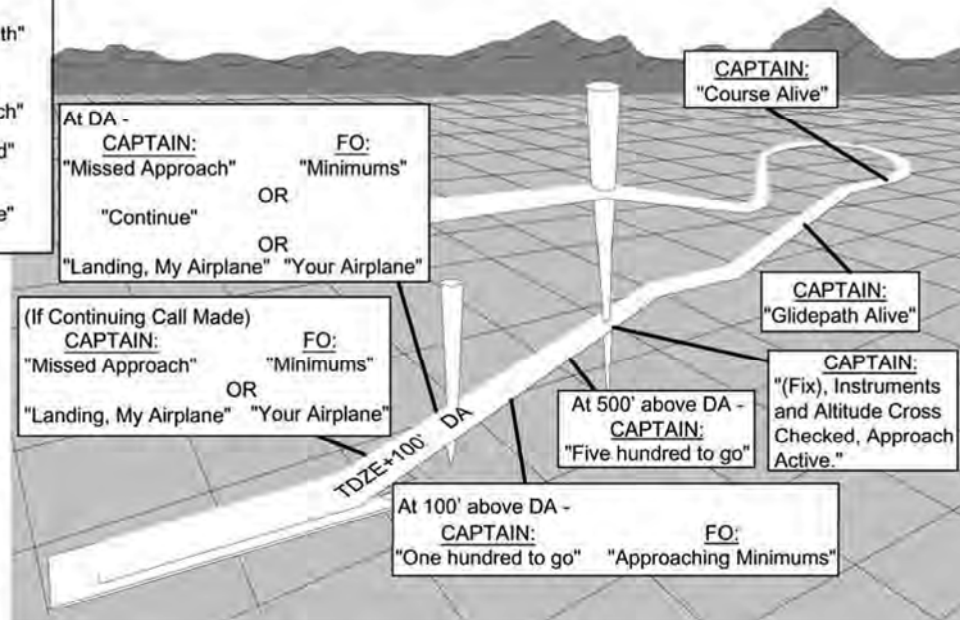
NOTE 1: When becoming aware the runway environment is in view and visual contact can be maintained, the Captain will state "Landing, My Airplane."

NOTE 2: If at 100 feet above the TDZE, a "Landing, My Airplane" or "Missed Approach" callout is not made, the First Officer will immediately execute a missed approach.

NOTE 3: For FMS Approach without VPATH, see Non-Precision Straight-In Approach (Captain Monitored).

RNP APPROACH (Captain Monitored)

NOTE: This profile and callouts apply to RNAV (RNP) approaches only.



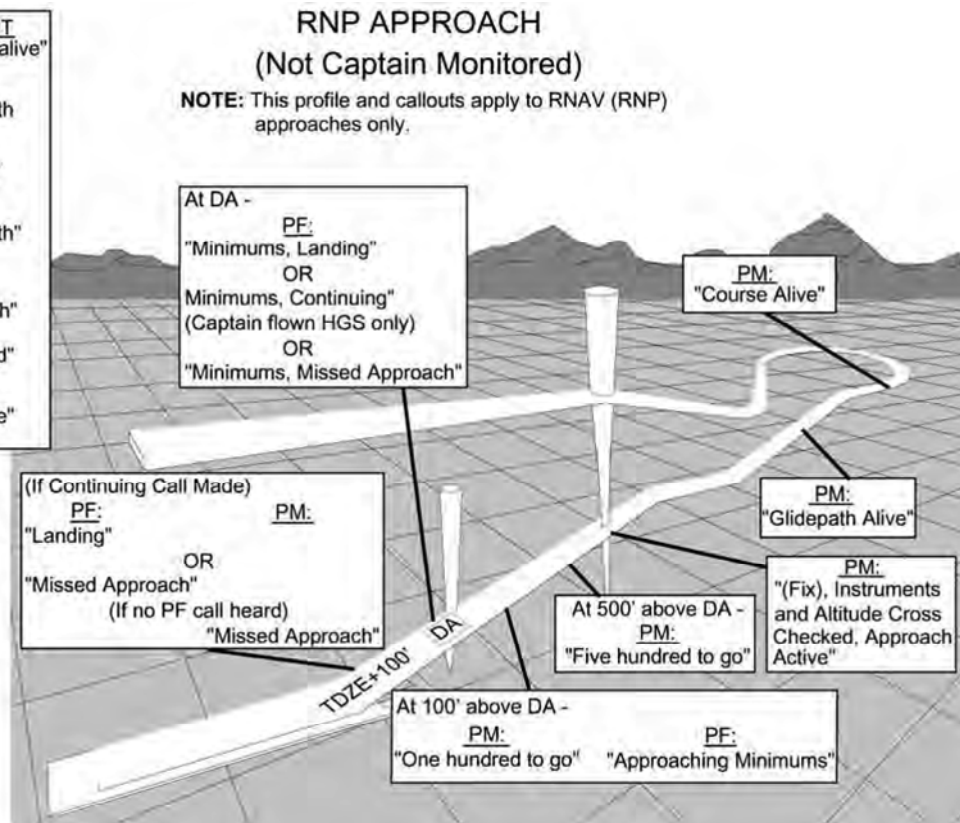
RNP Approach (Not Captain Monitored)

CONDITION	CALLOUT
First positive inward motion of the CDI	"Course alive"
First positive motion of VPATH Bar	"Glidepath alive"
Course deviations of more than one dot	"Course"
Glidepath deviations of more than 1/2 dot	"Glidepath"
Glidepath deviations of more than 75 ft (3/4 dot)	"Missed approach"
Airspeed deviations from Target of -5 or +10 knots	"Airspeed"
Sink rate in excess of 1,000 FPM	"Sink rate"

NOTE 1: The PM, when becoming aware the runway environment is in view, will state what is seen. (Example, "Strobes," "Approach lights," "Runway.")

NOTE 2: When it is determined visual contact with the runway can be maintained and standard callouts are no longer desired, the PF will state "Landing."

NOTE 3: For FMS Approach without VPATH, see Non-Precision Straight-In Approach (Not Captain Monitored).

**Instrument Approaches**

14 CFR: 121.567
CEME: E13

Flight crews shall not proceed with instrument approaches contrary to approved Ops Spec IFR weather minimums and instrument approach procedures.

Flight Crew Coordination and Pilot Monitoring

The Captain shall designate the pilot responsible for flying the aircraft. That pilot is responsible for aircraft control, navigation, and compliance with ATC Clearances and instructions.

While monitoring is a primary responsibility of both pilots, the Pilot Not Flying (PNF) is designated as the Pilot Monitoring (PM) to further define this essential role. The PM is responsible for monitoring aircraft flight path, navigation, systems, radio communications, and actively crosschecking the actions of the PF. As such, he is monitoring all aspects of the flight in order to detect deviations or errors.

NOTE:

References to Pilot Not Flying (PNF) in this and other manuals, such as Flight Standards Manuals, are replaced with Pilot Monitoring (PM). Actual text changes to reflect the replacement of PNF with PM will be accomplished in future revisions.

- Reading checklists is accomplished by the First Officer during ground operations and by the PM during flight operations.
- ATC/Company communications are normally accomplished by the First Officer during ground operations and by the PM during flight operations.
- The PF (Captain during ground operations) may assume communications when the PM is occupied with other tasks.
- The Automation Policy governs PF and PM roles in managing FMS programming and FD mode selections.

- During taxi, the First Officer as PM has a critical role in maintaining situation awareness, especially during operations on unfamiliar airports, during airport construction activities, congested areas, and low-vis operations.
- Any time either pilot will not be monitoring ATC communications, he shall advise the other pilot when he goes off ATC frequency and when he is back on ATC frequency. On his return, the other pilot should advise of any changes.
- To ensure proper actuation of the landing gear and flaps, the PF shall always state the unit to be actuated and the desired position.

Studies of industry crew performance data (LOSA, ASAP), incidents, and accidents have identified inadequate monitoring and crosschecking as factors leading to adverse safety consequences. Effective monitoring and crosschecking supports recognition and recovery from error and can literally be the last defense against incidents or accidents. Therefore, to ensure the highest level of safety, each pilot shall carefully monitor the aircraft flight path and systems while actively crosschecking the actions of the other crewmember.

Maintaining effective monitoring requires active attention. Monitoring is a primary task that shall be practiced constantly and consistently, regardless of workload. It is complicated by the requirement to perform other tasks at the same time, such as ATC/Company communication, reading checklists, etc. However, degraded monitoring performance can be present during low workload periods as well. Lapses in monitoring performance during lower workload periods are often associated with boredom/complacency.

Monitoring is the first step in recognizing errors and deviations. The communication of intent, such as the PF briefing when or where a delayed climb or descent will begin, can enhance the ability of the other to monitor.

The next step is to effectively communicate in a timely manner with the other crewmember when a deviation or error is detected. It is critical the PM speak up when errors or deviations are recognized.

Transfer of Aircraft Control

Change in aircraft control is a matter of notification and acknowledgment and shall only be accomplished using the following terminology:

Notification – “My airplane.” Acknowledgment – “Your airplane.”

The pilot assuming aircraft control shall continuously maintain:

- Unobstructed access to the flight controls, and
- Alertness and situational awareness.

Flightdeck Seat Belt and Shoulder Harness

14 CFR: 91.105(a-b) 121.311(h-i) 121.543(a)

Each pilot shall keep his seatbelt fastened when at his station. Each occupant of a seat equipped with a shoulder harness shall fasten the shoulder harness during takeoff and landing. The required duties of pilots in Horizon Air aircraft can be performed with the shoulder harness fastened.

Whenever a flightdeck observer seat is not occupied, the seatbelt and shoulder harness straps shall be secured. Buckling the straps together or folding the seat with straps enclosed complies with the regulation.

Seatbelt Signs and PA

14 CFR: 91.517(a) 91.519(b) 121.317(b) 121.571(a)(2)
CEME: E10C

The seatbelt sign shall be illuminated:

- While aircraft is in motion on the ground
- During takeoff and until aircraft is well into the air
- When turbulence is expected and during turbulent air conditions
- Preparatory to and while landing
- Any time the Captain deems necessary