

Honda Aircraft Company

SERVICE LETTER SL-420-42-011

SUBJECT: Determining landing distance on wet and contaminated runways

PURPOSE: To discuss factors affecting landing distance on wet and contaminated runways, and recommend use of Wet and Contaminated Runway Performance AFM Supplement data and TOLD software, if applicable.

**AIRPLANES
AFFECTED:** Aircraft Serial Numbers 42000011 – 42000234.

Service Letters (SL) are used as follows:

Provide information related to product improvement, economics, maintenance and/or operational practices, etc.

I. References

1. FAA Advisory Circular 91-79A Mitigating the Risks of a Runway Overrun Upon Landing
2. FAA SAFO 19003 Turbojet Braking Performance on Wet Runways

II. General

Honda Aircraft Company recently published Service Bulletin SB-420-42-019, which installs the HA-420 Airplane Flight Manual (AFM) Wet and Contaminated Supplement for aircraft SN 42000011 thru SN 42000234. Additionally, for those aircraft with Garmin 73 Series or 80.9.5 Software, SB-420-42-019 installs the Wet and Contaminated (W&C – sometimes referred to as EASA) Takeoff and Landing Database (TOLD) performance software. Honda Aircraft Company encourages all owners to install this valuable tool and use W&C data whenever calculating takeoff and landing performance on wet or contaminated runways, as it provides an improved assessment of the distances required to operate safely in a variety of runway surface conditions.

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The landing field length provided in the HA-420 AFM Section 5 Performance is based on the following flight profile:

1. The airplane on approach is established at V_{REF} prior to 50 feet above the runway, with the flaps set for landing and gear down, using thrust to maintain a 3-degree glideslope.
2. Thrust levers are rapidly reduced to IDLE at 50 feet above the runway, followed by a firm touchdown with little or no flare. This will result in a touchdown speed at approximately $0.95 V_{REF}$.
3. Prompt de-rotation after touchdown, then rapid application of maximum braking until the airplane stops.
4. The airplane is landed on a dry runway.

Deviations from the above, typical of everyday operational procedures, will result in increased landing distances. AFM Section 5 landing distance values include an additional 15% safety factor to account for operational factors, but the common deviations outlined below can easily exceed this margin.

FAA and industry studies of landing overrun accidents (see Reference 1) indicate that the following pilot technique factors during landing increase the risk of a runway overrun, and provide some guidance on extra margin that should be added when determining actual runway required for landing:

- Excess threshold crossing height. Each 10-foot increase above the assumed 50-foot threshold crossing height adds approximately 200 feet to landing distance.
- Increased landing speed. An approach at $V_{REF}+5$ knots with landing touchdown at V_{REF} adds approximately 10% to landing distance; an approach at $V_{REF}+10$ knots with touchdown at $V_{REF}+5$ knots adds approximately 20%.
- Extended flare. AFM landing distances assume minimal flare and landing at the runway aiming point (approximately 1,000 feet from the runway threshold). An extended flare will result in landing beyond the touchdown zone with a corresponding increase in landing distance.
- Delayed or decreased braking. Delay in brake application or using less than maximum braking force for passenger comfort increases stopping distance.
- Not accounting for the effects of runway conditions at time of arrival. Water, slush, snow or ice on the runway adversely affect the aircraft braking performance by reducing available friction force between the tires and the runway. The type and intensity of precipitation, runway surface temperature, runway surface texture (smooth vs grooved or porous friction course (PFC))

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overlay) and any runway treatment will all affect required landing distance. Accounting for runway conditions at time of arrival by using the wet and contaminated TOLD function provides the most accurate assessment of runway required for landing.

When landing on a wet runway, the AFM recommends increasing the predicted landing distance by 30%. This recommendation does not cover cases when the runway is contaminated by standing water, slush, snow or ice. The presence and intensity of active precipitation, the runway surface texture, surface grading and condition all affect available braking friction when landing. In conditions with active precipitation, adding 30% to the calculated landing distance may be inadequate.

For the operational in-flight landing assessment, pilots should take a conservative approach to determining whether the runway is wet or potentially contaminated. Using the AFM Wet and Contaminated Supplement distance for the current runway conditions will provide a more accurate prediction of runway required for landing. FAA analysis of data from overrun incidents and accidents on wet runways (see reference 2) found that the braking coefficient of friction in each case was significantly lower than expected for a wet runway. Heavy rain on a grooved or PFC runway, or moderate rain on a smooth runway, have been found to provide a friction coefficient similar to standing water conditions. When landing in these conditions, pilots should consider that the surface may be contaminated with standing water and adjust their landing distance assessment accordingly.

AFM W&C Supplement landing distance values include a 1.67 operational factor to meet commercial dispatch landing distance requirements, compared to the 1.15 operational factor included in AFM Section 5 landing distance values. Use of the factored landing distance values in the W&C Supplement for in-flight landing assessment will also help ensure adequate safety margin for landing, given the various factors affecting landing distance on wet and contaminated runways.

AFM and AFM W&C Supplement landing distances are in all cases predicated on use of maximum normal braking with anti-skid from the time the aircraft is de-rotated after touchdown until it stops. In some incidents on contaminated runways, pilots have elected to use the aircraft Emergency Brake when they believed that normal brakes were not providing adequate deceleration after landing. Honda Aircraft Company cautions that the Emergency Brake should only be used when called for by the AFM/QRH checklists, when normal braking is unavailable. Compared to normal braking with anti-skid, the Emergency Brake will increase stopping distance 50% - 100%, depending on runway conditions. Anti-skid is not available during use of the Emergency Brake; during some previous events, its activation on a wet or contaminated runway has resulted in a skid and loss of directional control.

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As there are tangible operational and safety benefits to our Customers and Operators, which may be realized through compliance with Service Bulletin SB-420-42-019, Honda Aircraft Company has issued Service Bulletin SB-420-42-019 as a Recommended category service bulletin.

To encourage compliance with this recommended service bulletin, Honda Aircraft Company is currently offering commercial coverage, providing the valuable data contained in the Wet and Contaminated AFM Supplement, at no charge to our Customers and Operators through July 31, 2024.

Note: Service Bulletin SB-420-42-019 provides the Wet and Contaminated AFM Supplement, at no charge during the coverage period. However, labor, expected to be typically less than one hour, is not covered by the Commercial Terms of SB-420-42-019.

III. Planning

The following information is for planning purposes only:

- Estimated hours to accomplish Service Bulletin SB-420-42-019: Up to **1.0 hour**
- Suggested number of people for the job: **1**
- **Total Labor hours: Up to 1.0 hour**

IV. Accomplishment Instructions

Complete the latest revision of Recommended Service Bulletin SB-420-42-019.

Note: Contact Honda Aircraft Technical Support (1-888-453-2501) with any questions in regard to this service letter.

V. Commercial Terms

Please refer to Service Bulletin SB-420-42-019.

VI. Other

Not Applicable.