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AIR PILOTS - COMMERCIAL AIR TRANSPORT SAFETY BRIEFING NOTE 07

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THE ROLE OF SAFETY PILOTS DURING LINE TRAINING

The Context

It is a widespread but not universal practice for pilots newly qualified on an aircraft type or promoted to command on any type to undergo a period of on-aircraft initial operating experience as both Pilot Flying (PF) and Pilot Monitoring (PM) during a series of sectors flown with a Training Captain. After a sufficient number of such sectors, the trainee must then pass a Line/Route Check before being released to the normal crew rostering process. The initial stages of such training are usually undertaken with a third type-qualified pilot occupying a flight deck supernumerary seat.

The underlying reason for having such a 'Safety Pilot' on board is to ensure that if the Training Captain concludes during a duty period that a trainee is failing to make adequate progress towards the standard required, they can be replaced by the Safety Pilot moving to their normal operating seat and, if necessary, the Training Captain changing seats.

However, a 'Safety Pilot' will, by occupying a raised/central position and wearing a headset, be in an excellent position from which to observe any significant oversights or errors and, if judged necessary, alert the operating crew and support the continued safe conduct of the flight. The extent to which their duties are documented in the applicable Operations Manual varies widely and may make little or no reference to this observation role. In the absence of any general guidance on when and how any in-flight alerting should occur, the Safety Pilot may be briefed by the Training Captain on their expectations but is sometimes left to decide for themselves what is appropriate. Key is that they are not present to help deliver training unless explicitly asked to do so by the Training Captain as commander.

The need for Safety Pilot intervention is very rare. However, there continue to be cases where, for whatever reason, a Safety Pilot has been present but has not sought to alert the Training Captain to an error or oversight until it is too late for recovery. Such instances appear to be closely related to either the ineffective oversight provided by the Safety Pilot or their uncertainty about when and how it is appropriate to intervene. The potential for an observant Safety Pilot to support the Training Captain's complex task during early stage line training is a valuable opportunity. It should not be ignored but to be effective they must be provided with a clear definition of the role.

Most operators who require on-aircraft line/route training prior to a Check before release to unrestricted rostering recognise that a Safety Pilot is of maximum value in the early stages of line training. The decision on when to dispense with them should be left to the Training Captains involved. Some operators specify completion of a specific minimum number of flights regardless of trainee progress which, although potentially appropriate for a new MPL licence holder in their first job, should otherwise be unnecessary.

Some examples of an ineffective Safety Pilot

- An automatically flown ILS by a Boeing 737-800 to Amsterdam in 2009 was attempted by the trainee First Officer with idle thrust set after an autothrottle fault occurred during final approach. Over flat terrain in visual daylight conditions, none of the three pilots noticed the absence of thrust or the steadily increasing pitch attitude which followed. Effective response to the stick shaker was delayed despite an attempt by the Safety Pilot (at last) to alert the operating crew to the need for thrust. As a result, terrain impact, aircraft destruction with consequent fatalities followed shortly afterwards.¹

¹ see: https://www.onderzoeksraad.nl/en/media/attachment/2018/7/10/rapport_ta_eng_web.pdf

- A daylight departure from Oslo in good visibility was made from the parallel taxiway by an Airbus A320 Training Captain in 2010 without either the First Office trainee or the Safety Pilot noticing. The trainee held an MPL and had a total of 167 hours flying experience all on type. Both they and the Safety Pilot “paid little attention to looking outside”².
- During a daylight landing at Yangon in 2020, an experienced A340 Captain converting to the A330 and on their first line training sector pitched up excessively in response to misunderstood guidance from the Training Captain and a damaging tail strike resulted. The Training Captain failed to make the operator-required alert call when the pitch attitude exceeded 7.5° and stated they had been looking outside. The Safety Pilot also appeared not to have been monitoring pitch attitude during the flare.³
- Departing Amsterdam on a new First Officer’s initial line training sector in 2018, the aircraft only got airborne from a rushed intersection departure just before the runway end after reduced thrust data for the full runway length was used because of the Safety Pilot’s runway performance data request error and the subsequent lack of checking prior to the Captain’s input of the data then generated.⁴

Discussion

For a rostered Safety Pilot to be effective in the observer role requires that their own relevant type experience exceeds the minimum necessary to act merely as a travelling ‘trainee substitute’. This invites a definition of both their duties and the level of experience which will enable them to fulfil those duties effectively. A diligent Safety Pilot will monitor the ‘big picture’ which results from the actions or inactions of both operating crew members. Although it is the trainee pilot who will most likely be seen to act incorrectly or omit an action, the role of an effective Safety Pilot includes satisfying themselves that the Training Captain is similarly aware and only if not, then intervening as pre-briefed if necessary. Note that a Safety Pilot may temporarily need to take their normal operating seat if the Training Captain in command needs to take a short physiological break in order to avoid an early-stage trainee being left as the only pilot at the controls. Note too that the presence of augmenting crew on long haul flights is likely to negate any need for a dedicated Safety Pilot since relief crew observing during climb and descent below 10,000 feet can cover the important part of the observing task.

Safety Recommendations

To Aircraft Operators

- The Operations Manual should adequately describe the duties of a Safety Pilot occupying a supernumerary crew seat during early stage line training flights and stress the importance of active observation throughout a flight as well as provision of any requested routine support.
- Pilots rostered as Safety Pilots should have significant type experience and be made generally aware of what will or may be expected of them. Their in-flight priority should be both silence and continuously effective observation and an understanding of the threshold for any intervention.
- The appropriate minimum type experience for First Officers to act as Safety Pilots should be established with consideration given as to whether observing trainee Captains undergoing line training justifies a greater experience than this minimum. All Safety Pilots should be formally designated based on either self-briefing from a specific document or relevant content in the Operations Manual or by successful completion of an online ground training module.
- Setting a relatively low minimum number of sectors with a Safety Pilot present before a Training Captain can (attributably) then recommend that one is no longer required will prevent the operationally inefficient use of a Safety Pilot for longer than is necessary.
- Long haul augmented crewing may allow use of non-operating pilots as Safety Pilots.

To Pilots

- A Captain authorised to oversee line training must ensure that an assigned Safety Pilot is aware of any relevant formal requirements and that as commander their personal expectations - with or without such requirements - are fully briefed. This brief should focus particularly on the threshold and method of intervention if the observer believes that the safety of the flight is at risk because of action or inaction by either of the operating flight crew.
- When acting as a Safety Pilot, you must ensure that you are aware of any formal procedures associated with the role, especially any which deal with the threshold and method of intervention in the event that, as an observer, you believe that the safety of the flight is at risk. If formal procedures do not address any doubt as to what is expected and the Training Captain involved does not brief you on what is expected of you, ensure you request any necessary clarification.

²see:<https://www.nsia.no/Aviation/Published-reports/2010-18-eng?pid=SHT-Report-ReportFile&attach=1>

³see:https://dcamyanmar.com/dcadca/images/AAIB/Final_report_of_SINGAPORE_AIRLINES_9V-SSI.pdf

⁴see:https://www.onderzoeksraad.nl/en/media/attachment/2022/5/19/takeoff_with_erroneous_takeoff_data_boeing_737_800.pdf