

操控與監控駕駛員的分工和責任

陳日新 譯

目的：本項SAFO建議民航業者訂定操控與監控駕駛員的分工和責任。

討論：不論以自動駕駛或以手動飛行，飛機駕駛員的第一優先都是能精確控制飛機的飛行路徑。在配置雙駕駛員的航空器上，實際操控航空器的駕駛員稱為操控駕駛員(pilot flying)，另一位則稱為監控駕駛員(pilot monitoring)。但審視現今民航業者的操作手冊發現，兩名駕駛員的角色及分工總不是訂定地很明確。因此本SAFO建議業者修訂相關手冊，明確敘述操控與監控駕駛員下列工作內容：

1. 飛航期間實際操控飛機的駕駛員稱為操控駕駛員，另一位則稱為監控駕駛員。
2. 操控駕駛員負責實際操控飛機，監控駕駛員則負責全程監視飛機目前及後續飛行路徑，並監看機上剩餘油量。
3. 操控駕駛員負責飛機實際的飛行管控(即使使用自動駕駛儀飛行時)，並應避免參與其它與操控飛航無關的作業。如果操控駕駛員需要從事其它可能影響飛機操控的動作，應先將飛機的操控權轉交至另一位駕駛員，並轉換角色為監控駕駛員。
4. 當進行操控與監控駕駛員角色互換時，雙方應進行口頭工作交接及相互確認，其中也應包括對於飛機目前狀態的短簡提示。
5. 監控駕駛員於飛航期間應全程協助操控駕駛員，包括掌握航管人員所下達所有導航指示、與鄰近航空器間隔離距離及飛機狀態等等。
6. 監控駕駛員負責觀察飛機及機上各系統的運作狀態，如發現飛行路徑與預定路徑有偏離時，或判斷可能會發生偏離時應提出警示，必要時並應進行直接干預(接手操控飛機)。

業者應檢視或訂定營運政策和相關之飛航運作程序，明確律定飛行組員間的職責和責任分工，以確保操控駕駛員可精確控制飛機的飛行路徑。其次：應儘量避免將與控制飛行路徑無關的工作分配給操控駕駛員。為確保操控與監控駕駛員職責和分工之有效性，業者應收集與飛航相關實務操作數據進行分析，並依分析結果進行操控與監控駕駛員的職責劃分修訂。建議業者進行操作面及訓練面(包括初訓、進階訓練及複訓)之整合作業，並強調操控與監控駕駛員角色分工及其重要性。

建議：業者之航務/訓練部門主管、訓練中心經理人、駕駛員考試官及飛航組員應該熟諳本項SAFO內容。各相關人員並應協力確保本項SAFO所述內容已納入營運政策中，並引進飛行員之地面訓練課程中，後續飛行訓練和年度考驗時則加強相關之訓練及考核作業。✈

Roles and Responsibilities for Pilot Flying and Pilot Monitoring

Purpose: This SAFO encourages operators to define roles and responsibilities for the PF and PM.

Discussion: Whether by inputs to autoflight systems or manually flying, controlling the flight path of the aircraft is the pilot's highest priority. In a two-pilot operation, one pilot is designated as PF and one pilot is designated as PM. Review of operators' manuals indicates that the roles and associated tasks of the PF and PM are not always clearly defined. Each operator should explicitly define the roles of the PF and PM to include:

1. At any point in time during the flight, one pilot is the PF and one pilot is the PM.
2. The PF is responsible for managing and the PM is responsible for monitoring the current and projected flight path and energy of the aircraft at all times.
3. The PF is always engaged in flying the aircraft (even when the aircraft is under autopilot control) and avoids tasks or activities that distract from that engagement. If the PF needs to engage in activities that would distract from aircraft control, the PF should transfer aircraft control to the other pilot, and then assume the PM role.
4. Transfer of PF and PM roles should be done positively with verbal assignment and verbal acceptance to include a short brief of aircraft state.
5. The PM supports the PF at all times, staying abreast of all air traffic control instructions and

clearances and aircraft state.

6. The PM monitors the aircraft and system states, calls out any perceived or potential deviations from the intended flight path, and intervenes if necessary.

Operational policies and procedures should be reviewed or developed to ensure the division of duties and responsibilities between flightcrew members protects the ability of the PF to control the flight path. Assigning non-flight path-related tasks to the PF should generally be avoided. Operational data should be collected and used to revise definitions of PF and PM roles and responsibilities to ensure their effectiveness. Operators are encouraged to take an integrated approach in operations and training (initial/upgrade and recurrent) to emphasize the responsibilities and importance of PF and PM roles.

Recommended Action: Directors of Operations, Directors of Training, Training Center Managers, Check Pilots, Training Pilots, and flightcrews should be familiar with the content of this SAFO. They should work together to ensure the content of this SAFO is incorporated into operational policy and provided to pilots during ground training, and reinforced during flight training and checks. ✈