Trans-Cockpit Authority Gradient In Service Flying

IJASM 2008; 52(2): 79-81

Modern aviators are required to combine physical, cognitive, team building, and communication skills, while simultaneously monitoring, managing, and updating a dynamic situation in a relatively hostile environment [1]. Communication in the cockpit is of critical importance in order to achieve safe and efficient operation of task. The authority gradient in the cockpit defines the level of communication that the crew pair can achieve. The senior pilot, must achieve satisfactory working relationship with his junior pilot. It should neither be an over-bearing, dictatorial approach nor one in which command function is obscured [2]. This gradient holds vital importance in areas of service flying where the rigid hierarchical structure of the defense forces comes into play. There may be situations wherein the junior pilot does not intervene in the senior pilots' decisions even though he knows that they are wrong, just because of the military literary or reality! Such decisions of the junior pilots could result into an error ridden event especially during emergencies in air. A few aircraft accident/incidents involving helicopters in the ----- forces are described to bring forth and substantiate the argument such trans cockpit authority gradient (TAG).

Incident1: A chetak helicopter was on a detachment for a casualty evacuation mission, 12 min flying time from its main base, in the northern sector. The aircraft was parked in the open at a makeshift helipad. The crew comprised of a senior aviator with 1100 hrs of experience on type and a co-pilot with about 350 hrs on type and also junior in service by 8 yrs, At 1430 hrs under the bright sunlight the crew saw low clouds approaching, which they thought would not head for their present location! Hence they delayed their take off back to base and left the aircraft parked in the open, which was strictly against the steward ioeratuibak oriceed (SOPs). After sometime they realized that the thunderstorm was headed straight for their location! In the melee that ensued the senior aviator decided to take of in a hurry for their main base, with the co-pilot in tow but the thunderstorm caught up with them and made them force land elsewhere.

Incident 2: A young aircrew diver with 25 hrs of flying experience was deployed to a flying base in the eastern sector. In a scrambled mission the aircrew was informed to search for and recover a lifebuoy. The senior pilot was in a dilemma. There were only two of them on board, they had located the lifebuoy, but how do they recover the lifebuoy? Should he turn back (and risk the wrath of a dozen senior officers?) or should he improvise? He opted for the latter (Steep TAG!). He asked the co-pilot who was a qualified aircrew diver to recover the lifebuoy and he would control the aircraft from the centre seat. The co-pilot complied with the decision of the pilot without questioning aeronautical decision making (Poor ADM/TAG). From here onwards things went down hill. The pilot could not see what was happening below and kept lowering the co-pilot (now the diver) till he almost drowned himself. Some desperate tugging on the cable made him realize this and he winched the co-pilot up. They then returned to base for a stern debrief.

Accident 1: A Chetak helicopter was on a regular training sortie from an western air base in the hunters section. The senior pilot decided to show some stunts to the co-pilot and started flying low-level along a railway track. The junior pilot did not object! Soon without realizing they hit a railway signal and crashed further ahead.

Incident 3: An An -32 was on a regular low level training sortie. The sortie was to be executed

at a minimum altitude of 150 m and the altimeter was set accordingly to 150 m. But during the sortie because of the annoying warnings the senior pilot set the altimeter to 100 m and proceeded flying at 120 an alternative of the junior pilot who was not comfortable with the GPWS coming on repeatedly made it clear to the captain that he does not want to hear anymore of those noises and warnings. The senior pilot realized his discomfort and reverted back to flying at 150 m and the rest of the sortie was uneventful.

In the first three cases the junior pilots knew that there was something amiss but did not have the required ADM attributes to influence the senior pilot's decision. Probably they did not understand the gravity of the situation they did not feel it important enough to transgress authority and make the senior aviator aware of the consequences of his decision. They did not assert themselves because of what we call 'rank' in the cockpit. They took it for granted that the senior is always right! Whereas in the last case (though because of irritation from the various noises in the headphones) the junior pilot made his mind clear to the senior pilot and averted a likely catastrophe.

In the aviation domain, the authority relationship between an aircraft captain and the junior pilot has been cited in many accidents and incidents. Research has shown that there is an optimum "trans-cockpit authority gradient" to allow an effective interface between pilots on a flight deck [3]. The gradient may be too flat, such as with two equally qualified individuals (or two officers of the same rank like in the first incident) occupying the two seats, or too steep, as with a dominating Senior pilot and a junior and unassertive co-pilot(as in the case of the second incident). In such cases, a reduced performance may result with a chance of error going undetected and uncorrected. A study in the United Kingdom of 249 airline pilots confirmed the importance of this aspect of flight deck communication [4]. Nearly 40 per cent of the junior pilots surveyed said that they had on several occasions failed to communicate to the captain their proper doubts about the operation of the aircraft. Reasons appeared to be a desire to avoid conflict and deference to the experience and authority of the captain. This scenario is more prevalent in the service environment, where the rank -------- is very rigid and inflexible. Greater emphasis needs to be laid on CRM during the flying training phase tohelps pilot understand the TAG cockpit discipline and satisfied. In the context of TAG it is worthwhile to put forward one of the findings of NTSB [5]. During investigation into a DC 8 air crash in 1978, the National Transportation Safety Board (NTSB) noted, "*the safety board believes that this accident exemplifies a recurring problem - a breakdown of cockpit management and teamwork during a situation involving malfunction of aircraft systems in flight. To combat this, responsibilities must be divided amongst members of the flight crew while the malfunction is being resolved....Admittedly, the stature of a captain and his management style may exert subtle pressure on his crew to conform to his way of thinking. It may hinder interaction and adequate monitoring and force other crew member to yield his right to express an opinion*". In another crash of a Being 737 in 1982, "NTSB reported the cause of the accident to the *co-pilot's lack of assertiveness and possibly a general hesitancy among subordinates to question superiors forcefully"* [6].

References

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Date of submission : 06 February 2008
Date of acceptance : 26 August 2008