

Air Pilots Survey of Laser Attack Reporting

Introduction

1. The UK Laser Group (UK LWG) meeting of 22 April 2015 discussed whether there might be general un-reporting of laser attacks with a perception that because pilots no longer feel that their efforts in raising a report will invoke any effective corrective response. The Air Pilots offered to conduct a 'quick look' survey of its members to test this. All Air Pilots' full members were invited by email on 19 May 2015 to take part in a SurveyMonkey®ⁱ anonymous survey "A short survey on reporting." The survey was closed on 29 June 2015 by when it had received 338 on-line responses. (A number of 'nil return' emails were also received from members.) Survey questions and answer categories were as follows:

- Questions:
 - "Please indicate the number of Laser Attacks you have been subjected to"
 - "Please indicate how many of the Laser Attacks above were reported formally"

- Responses top both questions could be entered in the following categories:
 - "as a leisure pilot"
 - "as a business pilot"
 - "as a commercial pilot"

- A text comment facility was provided with the following prompt:
 - "Please enter any comments or concerns below"

Results

2. Numerical data provided by the 338 on-line respondents are shown at Table 1.

Table 1 – SurveyMonkey numerical responses

| Type of Flying | Number of laser attacks experienced | Number of attacks reported | Reporting rate |
|---------------------------|-------------------------------------|----------------------------|----------------|
| As a leisure pilot (L) | 7 | 5 | 71% |
| As a business pilot (B) | 26 | 12 | 46% |
| As a commercial pilot (C) | 308 | 252 | 82% |
| Total (all L+B+C) | 341 | 269 | 79% |

3. 222 text comments were received, 161 of which were effectively just 'nothing to report'. One pilot noted there was no category for military pilots but the three military pilots who did respond all recorded 100% reporting of attacks they had experienced, which supported the view of the MAAⁱⁱ representative at the UK LWG that military reporting of incidents was well established and was probably close to, if not at, 100%. Some pilots who had not experienced any laser attacks also added comments. The principle comments are shown in Table 2.

Table 2 – Comments/concerns submitted

| Text Comment – Responder’s numerical responses at right | No of attacks | NO reported | Flying as (C,B,L) |
|---|---------------|-------------|-------------------|
| All attacks happened on approach into the following airports - VTBS & RPLL - ATC was advised of position and bearing relative to a/c. | 5 | 5 | C |
| Happened in NZ | 2 | 2 | C |
| As a police heli pilot we were able to successfully identify the origin of the laser and direct a police unit in order to affect a successful arrest and subsequent conviction. | 1 | 1 | B |
| These three attacks happened some time ago, one in the UK, two in Egypt. Our company has a much healthier reporting culture now and I have no doubt I would report such instances. | 3 | 0 | C |
| I don't do any leisure or business flying in Europe, only commercial scheduled airline. I have reported all of the attacks below 10,000' or so. Laser "sightings" above that I don't consider "attacks". | 6 | 6 | C |
| All attacks, bar one, occurred abroad with the majority being in Egypt where individual possession of a laser pen in the last few years has become widespread. | 10 | 10 | C |
| Both occurrences in China | 2 | 1 | C |
| No fresh concerns except that I was not aware that the issue is/was not being taken as seriously as heretofore | 4 | 4 | C |
| RW 32L KUL 10nm Final. Port side | 2 | 2 | C |
| Both attacks departing SBGR (Guarulhos IAP, Sao Paolo Brazil). | 2 | 1 | C |
| a regular occurrence when operating around west London area. | 2 | 2 | B |
| Twice departing RW22 at STN . Incidents occurred over a number of years | 2 | 2 | C |
| Little of my professional flying has been conducted in UK/ European airspace. The one instance occurred at a M.East airport when we were sufficiently high on approach for it to be no more than a distraction. The incident was reported by radio to the ATC unit (probably Approach frequency) we were working at the time. | 1 | 1 | C |
| Said attack was on the approach into GYD, so didn't report as the authorities there are not interested. | 1 | 0 | C |
| All 3 incidents were in the same general geographic area on a STAR into Guangzhou Baiyun airport over an approx 12 month period in 2014. | 3 | 3 | C |
| I work for Emirates, three incidents occurred on approach to DXB. Beirut a problem, as is Bombay. | 10 | 10 | C |
| 3 in Paris - well known. 1 XX days ago in Hong Kong. Bright Green laser shot from 2 nm finals, got me in the eyes. HK based B777 Captain | 4 | 1 | C |
| "Only occurred at medium altitude | 1 | 0 | C |
| All 3 lazer attacks were at some stage on the approach and all 3 were in the UK! | 3 | 3 | C |
| Both incidents at YSSY. | 2 | 2 | C |
| This occurrence was at Denpasar. | 1 | 1 | C |
| Brisbane .QLD - one, Los Angeles California- one | 2 | 2 | C |
| On approach into LHR, abeam of Canary Wharf | 1 | 1 | C |
| Targetted by green laser emanating from Chichester area during night flight in early 2015. Angle of attack was rear port quarter but continued over 30 seconds so no question that we were the target. Reported to Farnborough LARS on frequency at the time of attack. | 1 | 1 | L |
| The sole occasion was at night approximately one mile finals to R/W 26 at RAF Cranwell about 6 years ago. | 1 | 1 | C Mil? |
| ATC don't take it seriously/understand outside of Europe | 3 | 1 | C |
| 7 miles finals on Cathay flight, 27L at LHR. 2 attempts made to 'acquire' us...green laser strobed through cockpit. Police interviewed me. | 1 | 1 | C |
| This laser incident happened on the approach to 27R at LHR about 2 years ago. The laser was aimed from somewhere near Hounslow West Underground station and affected the First Officer (in right hand seat). He was momentarily blinded but had no lasting damage to his eyes. | 1 | 1 | C |
| Location, SE London | 1 | 1 | C |
| Seems to occur more in the winter months | 1 | 0 | C |
| Both in France with green lasers...one on final Approach to Paris LBG and one same (in hold) at Marseille. Both times informed ATC via radio, but no formal paperwork completed | 2 | 0 | B |

| | | | |
|--|----|----|---|
| Whilst flying a police helicopter at night over an urban area in the Midlands, we were subjected o a green laser attack. The effect was to distract and temporarily blind the crew. We managed to vector a police patrol onto the perpetrator and he was placed under arrest. I do not know the outcome of any charges or trials. | 1 | 1 | C |
| 1. arrival lhr green, 2. dep jnb green | 2 | 2 | C |
| I experienced a couple of attacks whilst flying as a police helicopter pilot some fourteen plus years ago. In these cases, police action was taken. I have reported quite a number since to ATC. However, despite being called to make a police statement on one later occasion, no further police action appears to have been taken. | 10 | 5 | C |
| Many thanks for your initiative | 3 | 3 | C |
| Cairo is the worst offender. Quite a few on approach to lhr | 40 | 40 | C |
| Helicopters are particularly prone to attack by laser - perhaps because the "general public" assume that all helicopters flying at night are police helicopters. During my years in police aviation we were subject to many attacks but often had the benefit of ground forces being able to be directed to the source of the attack. In general commercial aviation such assets are not available and I suspect that most miscreants go unidentified and unpunished. | 10 | 10 | C |
| Most were aimed at us at 10.000 ft gal so not really effective. One was done as we were on finals to Northolt say 1500ft but was not effective either. All reported to ATC and in two cases the Met Police Helicopter also airborne at the same time. | 6 | 6 | B |
| In my experience laser attacks seem to be destination specific. e.g. Rio, Muscat and once in London | 6 | 2 | C |
| Survey does not have a box for flight training. All my encounters were during flight training exercises at night | 5 | 5 | C |
| We are an aerial filming company and we have had many laser issues when filming events | 4 | 4 | C |
| The captain on all three occasions decided that there would be too much paperwork and very little chance of the authorities catching the perpetrators so decided not to make an official report | 3 | 0 | C |
| On approach to Oslo from the south, passing 15000 in the descent, a green laser from the left side directly into the flight deck. I averted my eyes until it had gone. This happened 2008/9 | 1 | 0 | C |
| Possibly not a laser attack as such, but I was subjected to a laser occurrence whilst landing at BHX some years ago from a site being prepared for a pop concert or something similar at the NEC which is next door to the airport. It was impossible to establish whether this was a deliberate attack as such or just a momentary error whilst setting up some laser equipment for use at the show. | 1 | 1 | B |
| I found that if the "attack" lasts for one or two seconds then ATC don't really do anything. Even a short attack can affect our night vision when on final approach and in all cases the reports should be taken seriously. | 2 | 2 | L |
| | 1 | 1 | C |
| Occurred in Melbourne, Australia | 2 | 2 | C |
| I think that this issue needs more attention from the authorities. There appears to be little or nothing ever done. | 20 | 20 | C |
| Informed ATC over radio. Nil follow up. | 1 | 1 | C |
| <u>COMMENTS FROM PILOTS WHO HAD NOT EXPERIENCED AN ATTACK</u> | | | |
| <ul style="list-style-type: none"> • A very serious problem that needs legislation! • Stronger action by judiciary required plus tighter controls on sale of lasers. • Last year I watched a helicopter of the Hong Kong Auxiliary Airforce lift off into the laser light show, which performs every night across Hong Kong harbour. These are higher-powered lasers than a simple hand held unit. The pilot did not fall out of the sky, he did not go blind, and no safety report was filed, as it is a normal procedure for him. He just does not stare at them. I suspect that many laser "attacks" are little more than an over-reaction by pilots who are upset that someone is playing with them. Professional pilots (as I was until I retired 2 years ago) must get used to modern light pollution in all its forms, and spend time on a safety issue that can save lives rather than being prissy about minor inconveniences. • Of much less concern to me than UAVs bought for a few pounds on the internet. • Not really convinced it is a problem. Yes a powerful laser will damage eyes, but the lasers generally in use are waved around in the Middle East at football matches/rallies all the time without an epidemic of blindness. This is coupled with the difficulty of keeping the beam on the cockpit for any time. • Not enough is being done to limit the purchase of laser pointers. • Given the difficulty the police have in catching these offenders, I would hope that lengthier custodial sentences than are currently being imposed will follow in future, to act as a deterrent. | | | |

Discussion

4. This simple survey was conducted to investigate whether there is under-reporting of laser attacks. The population surveyed and responding does not necessarily correlate with the population actively flying today so only limited analysis is possible. However, it does indicate that there is under-reporting, at a rate that seems to vary markedly between leisure, business and commercial pilots.

5. Although the business pilots record the lowest rate of formal reporting while commercial pilots report the highest, the text comments reveal that six commercial pilots considered that reporting their attacks to air traffic control (ATC) by radio constituted a 'formal report' but another did not. Clearly, an immediate call to ATC is essential to alert the necessary authorities such as the local police. However, there is no assurance that ATC will then raise a formal report to the aviation authorities; it could be inferred from the comments that nothing further was done, since with one exception there was no follow-up or feed-back. UK LWG felt that some ATC units might combine a number attacks occurring on the same shift or to a stream of aircraft on approach into a single report. Simply adjusting the number of 'formally reported' attacks on commercial pilots by the number only 'reported to ATC' would reduce the overall rate of reporting for this survey population to 74%.

6. Air Pilots have suffered laser attacks all around the world, with considerable variation in exposure at the individual level; some suffer laser attack regularly while many others have never experience one, which probably relates to the airports/time of day to which commercial pilots are most regularly rostered.

7. There is similar variation of views amongst the respondents. Some (who have never experienced an attack) believe laser attack is a non-issue for aviation, basing that view primarily on available power output and pointing accuracy. Of course, there is a vast difference between knowingly entering an area of laser (or searchlight) illumination, having first prepared by looking down and concentrating on the instruments, and being suddenly caught in the eye by a laser while looking out at the runway at night. Simulator studies in the 1980s showed that an unexpected sudden splash of laser light into the pilot's eyes, even at eye-safe power levels, creates a 'startle' response in the subject and an aversion to look again towards the same area. The availability of ever more powerful lasers and tracking/stabilization systems makes the potential for similar effects during normal operations all the more likely and recent reports of pilots suffering possibly permanent eye damage from laser attacks during approach to a UK airport suggest that risk is already present.

Conclusion

8. Laser attacks are under-reported. This will have reduced the official figures for laser attacks on aircraft yet governments and regulators base decision to take action to minimise the risk of further attacks on those figures. As UK LWG noted, lasers generally available to the general population are becoming more powerful and more prevalent. Decisions as to whether or not act against that threat could be based on erroneous data; this simple survey, suggests that official figures will reflect only some 75% of the actual laser attacks on aircraft pilots.

DAA
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ⁱ <https://www.surveymonkey.com/s/JZPC5W3>

ⁱⁱ Military Aviation Authority