AIRPROX REPORT No 2011014

Date/Time: 24 Feb 2011 1100Z

Position: 5413N 00143W (8nm SW by W of Leeming - elev 132ft)

Airspace: Vale of York AIAA (*Class:* G)

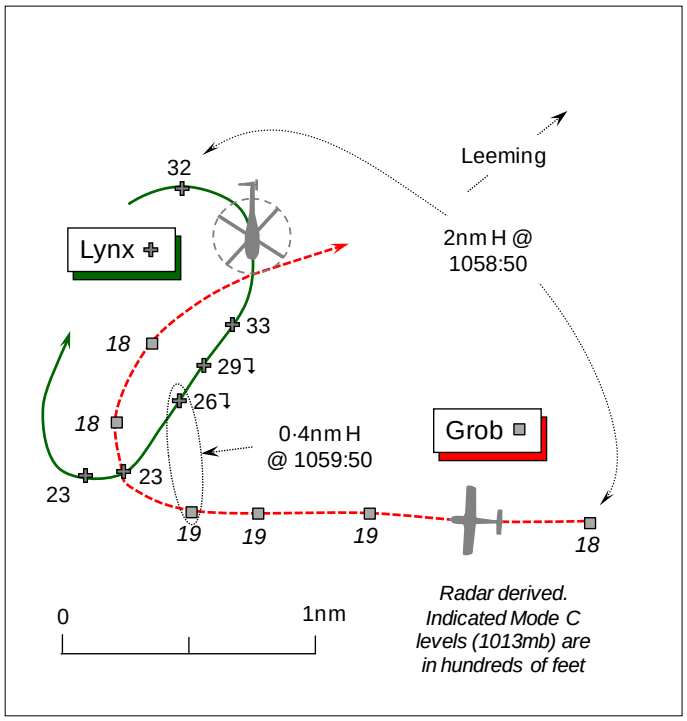
	Reporting Ac	*Reported Ac*
Type:	Lynx AH Mk7	Grob Tutor TMk1
Operator:	HQ JHC	HQ Air (Trg)
Alt/FL:	2200ft RPS (1014mb)	2000ft RPS (1013mb)
Weather:	VMC Sleet	VMC CLBL
Visibility:	20km	10km

Reported Separation:

500ft V/Nil H 400-500ft V/100m

Recorded Separation:

~500ft V



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND LYNX AH Mk 7 PILOT, a maintenance test pilot, reports he was the ac commander and PNF occupying the LH seat whilst conducting a dual airtest; the ac's crew consisted of just the 2 pilots. The workload in the cockpit was fairly high during the airtest as the PNF monitors instruments/limitations, whilst the PF concentrates on accurate speeds, NR control and rates of application of power. The airtest, involving a series of autorotations, was carried out in VMC whilst in receipt of a BS from Leeming ZONE on 127·750MHz about 2nm SW of Masham, which is situated 1nm SW of the Leeming MATZ boundary. A squawk of A0401 was selected with Mode C; enhanced Mode S is fitted but TCAS is not.

The same area had been used for the preceding 10min of the air test and, after carrying out the HASEL checks, the Lynx crew entered autorotation from 3000ft RPS (1014mb), heading SW at 80kt, intending to commence recovery from the autorotation at an altitude of 2000ft. Whilst looking out passing about 2200ft, he spotted a small white fixed-wing ac on the port side about 200m and 500ft below their helicopter that flew directly beneath them with less than 500ft clearance. Upon sighting the other ac – the Grob Tutor flying straight and level - the PF was instructed to overshoot from the autorotation and a climb was initiated to avoid the Tutor, which passed directly beneath his Lynx and then appeared on the starboard side, maintaining its heading he thought. Minimum vertical separation was less than 500ft and the Risk assessed as 'high'; an Airprox was reported to Leeming ZONE on the RT.

His helicopter has a grey and green camouflage scheme but the HISLs were on and the navlights on 'bright'.

THE GROB TUTOR T Mk1 PILOT reports that he was flying an Air Experience Flight (AEF) sortie, VFR, under a TS from Leeming APPROACH (APP) when traffic was reported to him whilst performing aerobatics. About 2min later, after completing the aerobatic manoeuvres, a visual recovery to Leeming was initiated with a gentle descent at 130kt, turning R onto a NE'ly heading in VMC, some 2000ft above cloud in between layers. About 1nm S of Masham, passing 030° in the R turn, descending through 4000ft RPS (1013mb) he thought, a camouflaged Lynx helicopter was seen heading W about 200m ahead and above his aeroplane crossing from R – L in level flight. He

passed about 400-500ft under the Lynx and about 100m slightly in front of it. No avoiding action was considered necessary and he assessed the Risk as 'low'.

A squawk of A4322 was selected with Modes C and S on. His aeroplane has a white colour-scheme and the HISL was on.

THE LEEMING ZONE CONTROLLER (ZONE) reports he was mentor to a trainee controller and they 'plugged-in' at about 1030 for a very quiet session, operating SSR only, because the Watchman ASR was unserviceable. The Aerodrome Availability/Weather State Colour Code was BLU.

Shortly after commencing the session, they received 2 pre-notes from Dishforth; one relating to a VFR transit to Carlisle and the subject Lynx departing for an airtest; both flights were issued the standard squawk of A0401 for a BS. The subject Lynx climbed out for the airtest, was placed under a BS and issued the BARNSLEY RPS (1014mb), whereupon the crew informed them they would operating up to 3000ft. The next call was when the Lynx pilot reported an Airprox, stating that a white ac had passed underneath them, possibly a Tutor. At the time no relevant contacts were showing on radar, although subsequently a squawk assigned to Leeming APP was observed about 2nm E and 2000ft below the Lynx tracking towards the aerodrome. The Lynx crew was informed about this ac, now well to the E and 2000ft below the helicopter, and advised that ATC was operating SSR only. The Lynx crew estimated that the reported ac had passed well within 500ft whilst they were at 3000ft RPS (1014 mb).

The Lynx crew then broadcast they were carrying out a series of autorotations and asked to be advised of any ac which came within 2-3nm of them. ZONE asked the Lynx crew if they wished to upgrade their ATS from the extant BS, but they declined, "as it would get a bit cluttered up on that". The Lynx crew retained their BS on 127·750MHz before initiating a VFR recovery back to Dishforth.

The Supervisor was advised of the Airprox and they were relieved from the ZONE position shortly afterwards. A phone call to the Lynx pilot at Dishforth ascertained he was happy with the ATS provided, was not apportioning blame, but would refer to his QHTI with a view to submitting an Airprox report. He estimated the minimum vertical separation was 500ft.

THE LEEMING APPROACH CONTROLLER (APP) reports that the Grob Tutor departed VFR to the SW, was identified and placed under a reduced TS as Leeming was operating with SSR only. Shortly afterwards TI was provided on traffic 5nm S tracking NW 1000ft below believed to be the Lynx. This TI was updated as the Tutor flew closer to the helicopter - at 3nm SW tracking SW manoeuvring 2000ft below and climbing - with another update on the Lynx when it was NW 2nm indicating 3300ft (1013mb).

THE LEEMING ATC SUPERVISOR (SUP) reports the unit was operating under a light workload with 2 flights on frequency. The only controllers providing an ATS were operating in the APP and ZONE positions, which were both manned by controllers under training screened by members of the Unit Standards Team. Although the Lynx pilot stated over the RT that he wished to file an Airprox, after landing he spoke with the pilot on the telephone who admitted that he did not inform ZONE that he would be conducting autorotation manoeuvres. It was explained that this information would have been of value to the ZONE controller when he was placed under a BS. Moreover, although operating SSR only, if the Lynx pilot had requested a TS, ZONE may have been able to pass TI on the Tutor before it became a potential hazard. He advised the Lynx pilot that he had also spoken to the Tutor pilot who admitted that he had been passed TI about the Lynx, with which he was visual and took his own separation by flying underneath. The Lynx pilot then advised that he would speak to his Duty Instructor. It was late afternoon when the Lynx pilot rang to inform him that he would be filing an Airprox.

HQ 1GP BM SM reports that this Airprox occurred 8nm SW of Leeming between a Tutor on an AEF sortie conducting aerobatics in receipt of a TS from Leeming APP, and a Lynx on an air-test from Dishforth operating VFR in receipt of a BS from Leeming ZONE.

Leeming were operating SSR only at the time of the occurrence, with both APP and ZONE manned by trainees and under a light workload.

The Lynx pilot reports that as part of the airtest there was a high cockpit workload with the PNF 'heads-in' monitoring instruments and limitations, while the PF was concentrating on maintaining accurate speeds, NR control and rates of power application. Moreover, the Lynx unit RQHI reports that these factors in addition to the restricted view from the Lynx cockpit, contributed to the Lynx crew's difficulty in visually acquiring the Tutor.

At 1048:01, the Lynx was identified by ZONE and placed under a BS, which was acknowledged *"…Basic Service 1-0-1-4 and we'll be operating up to 3 thousand feet on that"*. The Tutor was identified by APP shortly afterward and placed under a TS, reduced as Leeming were operating SSR only.

At 1048:48, [10min before the Airprox occurred] APP passed TI on the Lynx to the Tutor pilot stating, "*traffic south, 5 miles, tracking north-west, 1000ft below, believed to be a Lynx*." This was updated at 1051:36 as, "*traffic south-west, 3 miles, tracking south-west, 2000ft below climbing*." This was updated again at 1058:57 stating, "*traffic north-west, 2 miles, indicating 3300ft one-zero-one-three*." The radar replay indicates 1.6nm lateral separation, with the Lynx in a R turn indicating 3300ft Mode C (1013mb) and the Tutor tracking W'ly indicating 1800ft Mode C (1013mb).

At 1059:18 the Lynx rolled out of the right-turn to track south-west, at which point 0.9nm lateral separation exists. At 1059:33 the Lynx has commenced a 2000ft/min descent, with 0.6nm lateral separation extant. At 1059:48 the Tutor appears to have made a relatively rapid manoeuvre to the NW, reducing the lateral separation between it and the Lynx to 0.2nm, with the Lynx now descending through 2400ft.

The ZONE controller states in their report that "at the time (of the Airprox) no relevant contacts were showing on radar, although subsequently a Leeming APP squawk was seen approximately 2 miles east of the Lynx", which was after the CPA. This is substantiated by ZONE's comments at 1100:08 in reply to the Lynx's Airprox report stating, "*we did lose SSR on that aircraft, it's just popped up now* (on the radar replay the Tutor is 0.6nm NE of the Lynx)." However, given that APP was able to update TI to the Tutor at 1058:57, when 1.6nm separation existed, it is clear that the SSR label was visible at this point.

The Tutor pilot reports that their first sighting of the Lynx occurs at the point where around 200m lateral separation existed with the helicopter above, with the Lynx pilot reporting the same first sighting distance. Given that the Tutor pilot assessed minimum separation as 100m and 4-500ft, it is likely that the pilots became visual with each other immediately prior to the CPA.

[UKAB Note (2): The Grob Tutor passed beneath the Lynx, in between sweeps, moments after 1059:50, with 700ft separation evident on Mode C before the 'merge' and 500ft afterwards as the Grob turns away to the NE.]

In terms of ATSOCAS provision to the Tutor, APP provided timely and accurate TI to the Tutor that should have enabled the pilot to visually acquire the Lynx and to take appropriate action. In this case, the Tutor pilot seems to have spotted the Lynx relatively late, at approximately the same point as the Lynx PNF spotted the Tutor and commanded the overshoot.

At the last confirmed point that the Tutor's SSR label was visible to ZONE and APP, given the relative altitudes of the aircraft, there was nothing to suggest to ZONE that a definite risk of collision existed between the Lynx and Tutor. Therefore, in keeping with the terms of a BS there was no requirement for them to pass a warning to the Lynx pilot on the Tutor.

Throughout the incident sequence the Tutor appears to have maintained its altitude, albeit that for a short period it indicates 1900ft. However, the Lynx began a descent which brought it into confliction

with the Tutor at the point when only 0.6nm lateral separation existed. It is likely, given the Lynx pilot's statement over cockpit workload and the RQHI's report on reduced visibility from the cockpit, that these factors precluded the Lynx crew from visually acquiring the Tutor prior to commencing their descent.

In this instance, the ATM related safety barriers worked appropriately in that the pilot in receipt of the TS received timely and accurate TI to allow them to visually acquire the conflicting ac. However, the Tutor pilot was unable to sight the Lynx until relatively late. That said, the Tutor pilot felt that no avoiding action was required having spotted the Lynx, which was at or about the point when the Lynx PNF sighted the Tutor.

THE WESTLAND LYNX Mk 7 PILOT'S UNIT comments that the restricted view from the Lynx cockpit coupled with the requirement for the LHS ac commander to have his 'eyes-in' in order to record the details of the airtest, coupled with the difficulty in visually identifying another aircraft when looking down from above resulted in this Airprox. Action has been taken at local level requiring a rear-seat crew to be carried on all airtests in order to assist with lookout.

HQ JHC comments that the avoiding action taken by the Lynx crew was effective but it is clear that this potential conflict could have been prevented if each pilot had spotted the other ac earlier. It would appear that the Tutor pilot would have been forced to take action if the Lynx crew had not spotted him first, however the Tutor had in fact seen the Lynx and decided that there was no conflict. In hindsight, the most sensible course of action would have been for the Lynx pilot to upgrade the air traffic service, knowing that he was particularly busy in the cockpit, despite the potential for a more cluttered frequency – he could subsequently decide to downgrade the service if necessary. The action of the Lynx pilot's unit requiring an extra rear-crewmember to be carried on all airtests to assist with lookout is commended. It is also recommended that the unit pilots are reminded that requesting an upgrade in traffic service is usually a sensible precaution during periods of high cockpit workload.

HQ AIR (TRG) comments that the Tutor was operating under a TS in compliance with 22 (Trg) Gp Orders. It is unfortunate that the pilot chose to operate quite so close to the Lynx's reported position but it is not known what his airspace or weather considerations were. In mitigation, the TI received would have indicated that the Lynx was tracking N or NE and he may have reasonably assumed that his WSW track would keep him clear. As it was, in the minute preceding the CPA, there was no TI as the Lynx turned into confliction. HQ Air agrees that the sighting probably occurred just before CPA, probably as the Tutor pilot commenced a turn to the right, with the Lynx approaching from above just forward of the wing. The ongoing fleet embodiment of a Traffic Alerting System to the Tutor should reduce the likelihood of a recurrence.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The HQ AAC pilot Member briefed the Board that a Lynx airtest is a very intensive sortie, especially during autorotation manoeuvres, demanding the fullest concentration of the pilots who must be very careful indeed not to overspeed the rotor. Consequently, the Lynx pilots' attention here would have been closely focussed within the cockpit during the 'auto', in line with the reporting pilot's account, with a potentially adverse impact on lookout. It was plain that the Lynx pilots had not spotted the Grob Tutor as they turned about at the northern extremity of their racetrack, and were unaware of its presence below them, just over 0·6nm away when they initiated the descent the radar recording revealed. Furthermore, the Lynx crew had not mentioned to the controller that they would be conducting autorotation manoeuvres on the RT, merely *"..operating up to 3000 feet…".* The AAC pilot Member suggested that a call to ATC on the landline beforehand to brief the Supervisor and explain in more detail the sortie content might have been advantageous. Moreover, he concurred

with the Command's view that a TS would have been beneficial to supplement the Lynx crew's lookout and assist them with their responsibilities to 'see and avoid' other traffic. Under the BS they had requested there was no compunction on ZONE to track the helicopter or provide any form of TI unless they had asked for an upgrade to their ATS. Controller members agreed that a TS would have given the Lynx crew much better SA; if the additional RT transmissions associated with a TS were a distraction, the Lynx crew could have opted for this service for the limited duration of their auto rotation manoeuvres. It was disappointing that the crew had not given ZONE more insight into what they were doing. As it was, the Lynx P-I-C eventually spotted the Grob below him during the 'auto', in time to ensure that robust avoiding action could be initiated by the PF and vertical separation maintained as their tracks crossed.

Conversely, the Grob pilot had obtained a TS from APP and had been given TI three times about the Lynx, the last transmission advising that was it 2nm away to the NW and over 1000ft above him. Whilst APP would not have known the Lynx was about to descend, this TI was ultimately misleading. It lacked the important detail of the helicopter's course; moreover, the Lynx subsequently turned R about into confliction. Understandably, the Grob pilot might not have been at all concerned by another ac flying 1000ft clear above, but the TI gave no indication whatsoever of the helicopter's projected flightpath and did not 'paint the whole picture'. Members were adamant that updated TI was warranted when the Lynx headed toward the Tutor and the geometry of the situation changed so significantly. Whilst the radar recording did not replicate exactly what was displayed to the Leeming controllers at the time, it seemed that both ac were in solid radar coverage and had both been displayed to APP only 1min before the CPA when the last transmission of TI was given. Indeed, if either ac had faded from coverage that should have been of concern to APP and might have presaged a warning. A civilian controller Member was also concerned that the two controllers, operating in close proximity from the same ACR and both with trainees, were not liaising more closely about their traffic. The two positions were working only one flight each when the Airprox occurred and the Member perceived that a more proactive stance by the controllers involved might have averted this Airprox.

The Grob Tutor pilot was evidently not concerned when he saw the Lynx crossing ahead, as by that time the Lynx crew had already levelled off clear above him. No avoiding action was therefore warranted on his part. The Board concluded, therefore, that this Airprox had resulted from a conflict in the Vale of York AIAA, resolved by the Lynx crew. While debating the inherent Risk one Member opined that the dynamic nature of the encounter, coupled with the late sighting, followed by the robust avoiding action taken by the Lynx crew as they overshot from the autorotation had compromised the safety of these two ac. However, the overwhelming view of the Members was that the Lynx crew's prompt action on sighting the Tutor had ensured that over 500ft of vertical separation was preserved after they had established level flight, which the Board concluded had effectively removed the Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in the Vale of York AIAA resolved by the Lynx crew.

Degree of Risk: C