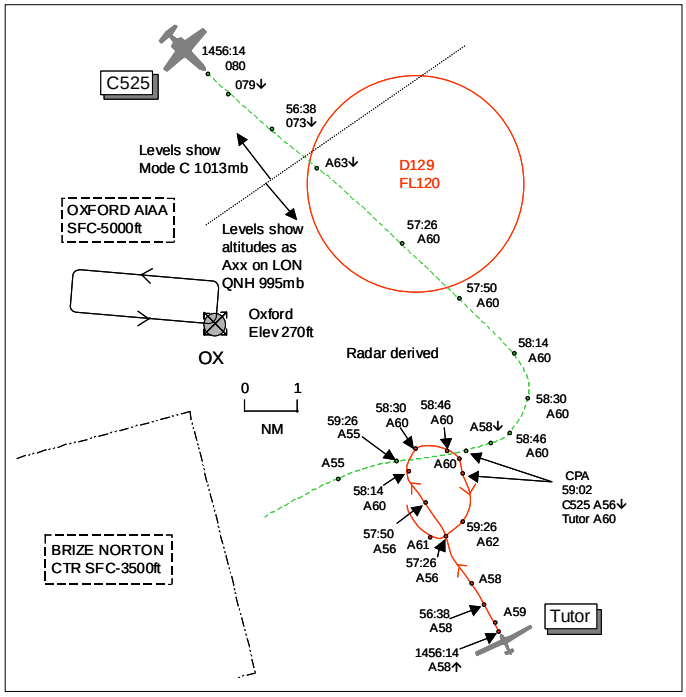
AIRPROX REPORT No 2010006

Date/Time:	19 Feb 1459	
Position:	5148N 00112W (5nm SE Oxford - elev 270ft)	
Airspace:	Oxford AIAA	(*Class: G*)
	Reporting Ac	*Reported Ac*
Type:	C525	Grob Tutor
Operator:	Civ Pte	HQ AIR (TRG)
Alt/FL:	FL65	2000-7000ft (RPS)
Weather:	VMC CLAC	VMC CLOC
Visibility:		
Reported Separation:		
	Nil V/0·5nm H	Not seen
Recorded Separation:		
	400ft V/0·4nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C525 PILOT reports flying solo inbound to Oxford IFR routeing from PEPUL [33nm NW OX] on a very late handover to Oxford ATC from London when only 5nm from the OX NDB, descending to FL65. After an introductory call to Oxford he was already at the OX and he requested further instructions. ATC told him to either orbit or join the hold at FL65 and he elected to join the hold. He turned R and entered the hold and almost immediately TCAS commanded a 'dive'. He saw the traffic, a single-engine ac, flying amongst the cloud tops and heading straight towards him. He initiated a rapid dive and immediately entered cloud becoming fully IMC, estimating the CPA as 0·5nm at the same level. He informed ATC of their actions and was cautioned on other traffic in the hold at FL35. He stopped descent at FL55, he thought [actually FL60], and the other traffic in the hold was identified on the TCAS screen. Meanwhile a new target entered the hold area from the NE heading directly towards them, which led to a second TCAS RA 'descend'; he turned sharp L to avoid the traffic. He descended to FL35 and by now his ac was S of the hold. He informed ATC who told him the Wx was clearer to the NW and recommended further descent in this area. After turning onto a NW'ly heading he found a 'wall' of ac targets, so many that despite a TCAS range of 5nm he was unable to read many of their heights owing to 1 target covering the altitude numbers of others. He turned W to try and find a gap in the traffic and a way through. Eventually he headed N in clear air and descended to 2000ft QNH. He then realised that after flying at FL35 he had entered the Brize CTR by descent whilst looking for a way N. He later rang Brize Supervisor to apologise and he also spoke to Oxford ATC who was unaware of the conflicting traffic. At no time was his IFR status officially cancelled. He considered that his ac was at great risk on several occasions and the situation of a protected environment whilst IFR and IMC should be considered.

THE GROB TUTOR PILOT reports that as the Airprox was not immediately reported it was difficult to remember the exact details of each of the 9 local sorties flown that day from Benson. The visibility was good to excellent, >10km, with scattered cumulus cloud, which limited full horizon scanning. The sorties were flown around the Oxford area, then towards Oakley disused airfield and as far E as Stokenchurch mast with each 30min flight profile varied to avoid area of poor Wx; altitude varied from 2000ft to 7000ft RPS. Benson gave a good TS throughout, albeit limited to SSR only; radio communications were good. At the reported time he remembered a variety of traffic calls from Benson and he was underflown by a light twin-engine ac but a good 1000ft below. This was the only contact of concern, as other traffic calls were either opening and reducing as a factor or he turned to create an opening vector.

THE OXFORD APPROACH CONTROLLER reports the C525 was pre-noted to the OX NDB and was given an acceptance level of FL65. The C525 crew's first call was 'passing through the OX' after a late handover from London. The crew then apparently had a TCAS alert and also requested a visual join. The flight was told to route back to the OX at FL65 whilst the visual join was coordinated. The crew replied that they were now at FL60 as they had descended in response to a TCAS alert, which was against unknown traffic not working Approach. They were told that they would probably receive another TCAS alert against inbound traffic at FL55, which they were already aware of. The pilot then proceeded to descend further, infringing the Brize CTR, and eventually ended up continuing descent to the NW to position for a visual crosswind join for RW01 RH cct.

ATSI reports that the Airprox occurred in Class G airspace 5nm SE of Oxford Airport. Oxford Approach were providing a PS on frequency 125·325MHz without information derived from any surveillance system. Approach aids are situated on the airfield and include VDF, the OX(L) NDB together with an ILS/DME - RWY19. Oxford approach were utililising the NDB(L)/DME 100 deg hold and approach with RWY01 in use.

The C525 was an IFR flight inbound from Edinburgh, prenoted by London TC and given an acceptance level of FL65 at the OX NDB. Three other ac were inbound below the C525. The first was descending in the NDB procedure, the second passing FL45 in the descent to altitude 3500ft approaching from the NE and the third ac was to the SE climbing VFR and cleared to route to the OX NDB on reaching FL55.

A Wx report for Oxford was not available, however a METAR for RAF Benson is provided: METAR EGUB 191450Z 9999 SCT032 05/M02 Q0994 BLU NOSIG=

MATS Pt1, Section 1, Chapter 11, Page 10, Para 6.1.1 comments that *'Pilots flying in the vicinity of aerodromes, ATS routes, or navigational aids where it is known that a Procedural Service is provided, are strongly encouraged to attempt to establish RTF contact with the notified ATS provider.'*

At 1456:14, after a late transfer by London, the C525 flight called Oxford Approach, *"Good afternoon C525 c/s Citation with golf just approaching the Oxford XRAY descending flight level six five."* Oxford replied, *"C525 c/s good afternoon er you will have to enter the hold IFR flight level six five I've got two IFR er inbounds er below you and IFR traffic also departing"*. At 1456:35 the C525 pilot requests, *"Any chance we can go visual madam and do er a right hand join for runway one zero"* (Note: RW01 is in use). ATC replied, *"Yeah that shouldn't be a problem but just bear with me though."* After asking and receiving confirmation on the number of POB, at 1457:25 ATC transmits, *"C525 c/s roger for your er visual join did you say you want to position right base for runway er zero one"*; the C525 pilot replies, *"whichever suits you madam"*. ATC then replies, *"Okay just er let me coordinate with the tower controller and see what's acceptable for him".* The C525 pilot reponds with, *"Okay ma'am just bear in mind we're now passed Oxford Xray er Oscar Xray"*. At 1457:47 ATC reply, *"C525 c/s roger if you wish to orbit in the er Oscar Xray hold flight level six five until er I can arrange er a visual join for you that's fine by me",* to which the C525 pilot replies, *"Okay wilco thanks C525 c/s"*.

About 1min later at 1458:48 the C525 pilot reports, *"Oxford er C525 c/s is taking avoiding action TCAS report same altitude..(*unintelligible word)..*aircraft",* but did not specify the nature of avoiding action or whether this was as a result of a TCAS RA. ATC respond, *"C525 c/s roger I I've got no reported traffic at flight level six five and no means of er finding out what the traffic is at the moment*". The C525 pilot responds (1459:04) with, *"That's copy we just avoided it we're now clear",* and shortly after at 1459:28, *"Oxford er C525 c/s is maintaining flight level six zero passing through the hold."* ATC respond with *"Roger your level was flight level six five and maintain level six five*". The C525 pilot replies, *"But madam I have a TA TCAS above me at flight level six five"*. At 1459:42 ATC passes essential TI, *"Okay and chances are then you'll get one below you flight level five five I've got traffic routeing to the Oscar Xray flight level five five".* The C525 pilot replies, *" I have a TCAS on that madam I am clear of that traffic",* and ATC acknowledge.

About 1min later at 1500:55 the controller suggested to the C525, *"C525 c/s are you able to depart the overhead to the northwest of the airfield and then er descend through cloud looks quite scattered over".* The C525 pilot replied, *"Wilco madam we'll turn around now over to the northwest er where we're heading now we're actually west and clear of the hold"*. ATC then request *"C525 c/s roger and tu over to the northwest if you're able to de descend VFR and then you can make either a crosswind or downwind join for zero one".* The C525 pilot agrees, *"co madam thank you C525 c/s heading northwest".*

The C525 flight was provided with additional TI on the traffic holding at A3500ft and a PA34 departing the cct into the local area. The C525 pilot reported sighting other traffic in the area 1500ft below him, that was not believed to be working Oxford approach, and additionally that his ac was clear of the holding pattern. [Traffic was working Brize E'bound in the approach pattern at altitude 2800ft in the CTR] At 1503:00 the Brize controller advised Oxford that the C525 has infinged the Brize Norton CTR (SFC to 3500ft) as it descended and commenced a R turn towards Oxford. About 2min later at 1505:05 the C525 pilot confirmed VFR and visual with the airfield. The C525 joined a RH visual circuit RW01 and landed at 1509.

At the time of the Airprox the C525 was operating in Class G airspace and in receipt of a PS. The Controller was not aware of the unknown traffic in the vicinity at FL65, nor was the controller immediately aware that the C525 had descended to FL60 as a result of the avoiding action. This resulted in a loss of separation with the traffic below at FL55 and essential TI was passed. The controller did not have access to a surveillance system; however, the C525 pilot reported that TCAS indicated that the ac was clear of the traffic at FL55. The Controller asked the pilot if he was able to route to the NW of the airfield and descend through scattered cloud. Although not a factor in the Airprox, the controller then asked the pilot to descend VFR, effectively cancelling the IFR flight plan. Obtaining the pilots agreement to descend maintaining own separation and VMC would have better met the requirements of MATS Pt1.

MATS Pt1, Section 1, Chapter 11, Page 10, Para 6.1.1 – Procedural Service.
'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic'.

MATS Pt1, Section 1, Chapter 11, Page 11, Para 6.5.1- Traffic Information.
'The controller shall provide traffic information, if it is considered that a confliction may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however, there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance. The controller may, subject to workload, also provide traffic information on other aircraft participating in the Procedural Service, in order to improve the pilot's situational awareness. Under a Procedural Service, the controller has no ability to pass traffic information on any aircraft that he is not in communication with, unless he has been passed traffic information by another ATS unit.'

MATS Pt1, Section 1, Chapter 11, Page 11, Para 6.6.1- Deconfliction.
'A controller shall provide deconfliction instructions by allocating levels, radials, tracks, and time restrictions, or use pilot position reports, aimed at achieving a planned deconfliction minima from other aircraft to which the controller is providing a Procedural Service in Class F/G airspace. The deconfliction minima are: - 1000ft vertically or 500ft vertically where levels are allocated in accordance with the quadrantal rule (or otherwise when subject to CAA approval) or those lateral and longitudinal criteria listed in Section 1 Chapter 3 as lateral and longitudinal separation standards.'

MATS Pt1, Section 1, Chapter 3, Page 2, Para 4 – Essential Traffic Information.
'Essential traffic is traffic which is separated for any period by less than the specified standard separation. It is normally passed in situations when ATS surveillance systems are not available. Essential traffic information passed to an aircraft shall include: -a) Direction of flight of conflicting aircraft; b) Type of conflicting aircraft; c) Cruising level of conflicting aircraft and ETA for the reporting

point, or for aircraft passing through the level of another with less than the normal separation; the ETA for the reporting point nearest to where the aircraft will cross levels; and d) Any alternative clearance.'

MATS Pt1, Section 1, Chapter 2, Page 5, Para 7.1 – Cancellation of IFR Plan.
'Change from IFR flight to VFR flight shall only be acceptable when the pilot uses the expression "cancelling my IFR flight". Pilots must not be invited to cancel, but if there is any doubt about a pilot's intentions he may be asked if he wishes to cancel his IFR flight plan.'

MATS Pt1, Section 1, Chapter 3, Page 3, Para 5.5 - VMC Climb and Descent
'To avoid excessive delays to traffic when ATS surveillance systems are not available, controllers may authorise an aircraft to climb or descend in VMC provided: a) essential traffic information is given; b) the pilot of the aircraft climbing or descending agrees to maintain his own separation from other aircraft; c) It is during the hours of daylight; d) the aircraft is flying in visual meteorological conditions; e) the manoeuvre is restricted to Class D, E, F and G airspace at or below FL100; and f) the aircraft is not in CAS-T'.

HQ AIR ATM SAFETY MANAGEMENT reports that the C525 was operating in the vicinity of Oxford Kidlington Airfield at FL65 in Class G airspace. The Tutor from RAF Benson, was operating VFR between Benson, Oxford and Oakley disused airfield, in Class G airspace in receipt of a TS from Benson APP on 376·650Mhz.

Benson APP was providing services to traffic general handling to the W of Benson as well as approach services to station based ac. At the time of the incident the controller reported a medium workload with 4 speaking units on frequency. The Tutor pilot called on frequency at 1457:25 and a TS was applied (type of service is notified by GND prior to departure). Although the tape transcript showed numerous calls to the other ac on frequency, the only TI passed to the Tutor occurred at 1500:04, after the incident has happened. Due to the late notification of the Airprox the controller submitted an AIR (C) report 3 months after the event and, as such, detail was scant. After speaking to the controller to gain further information he reported *"from listening to the recordings I can ascertain that at the time of the incident, I was giving traffic information to the rotary on frequency and traffic info was not given on the ac in question to the Tutor until after the event."* This view is substantiated by the radar replay, which shows at 1458:30, the Tutor turning towards the C525. At the same time APP was passing RPSs to the Tutor, then to AC3, a rotary on frequency also under TS. At 1458:36 APP's attention turned to AC3 and TI was passed at 1458:52 as *"AC3 c/s traffic north east one mile similar direction indicating two hundred feet below".* Radar replay shows CPA at 1459:02 at 0·4nm. During conversation with the controller, it was ascertained APP had focussed attention on AC3 and had not seen the Tutor turn towards the C525 and into confliction.

Although detail was lacking from reports submitted, due to the time taken in notifying the ATS provider, the facts involved in the incident were easily determined. Benson ATC Watchman radar had been unserviceable for a number of months and they were providing limited services with SSR only. This restriction increases controller's workload and reduces the service being discharged. Both ac were operating serviceable SSR Mode 3A and both were within secondary radar coverage of Benson ATC. APP had 4 ac on frequency and workload was reported as medium. It is evident that the controller had become focused on a rotary ac close to the Benson area shortly before the incident, which reduced SA. The controller stated no recollection of the incident or the Tutor being in confliction with another ac, which indicated that APP was not monitoring the Tutor immediately prior to, or after the incident. Although the pilot was responsible for separation from other traffic under the rules of a TS, Benson APP did not provide adequate TI in order for the pilot to take timely action to avoid confliction. HQ AIR ATM believes this lack of timely and accurate TI, as a result of increased workload and reduced SA, was a contributing factor in this Airprox. The increase in workload and reduction of service at Benson has been recognised and the TS required by Tutor ac is currently being provided by RAF Brize Norton.

Recommendations. RAF Brize Norton will continue to provide TS to Tutor ac until RAF Benson recovers its Watchman radar. RAF Brize Norton has a long standing LoA with Oxford Kidlington ATC

(LOA No4 which states "*Brize Norton ATC will notify Oxford ATC of aircraft under their control which intend to transit within 2nm of Oxford ATZ at or below flight level 80*", which recognises the IFR procedural hold which operates above Oxford ATZ. It is a recommendation that, once RAF Benson recommences radar services to station based Tutor ac, they should investigate a similar agreement.

HQ AIR (TRG) comments that unfortunately as the Tutor pilot was not informed until sometime after the event he could not remember the Airprox details and therefore this HQ has nothing to add. However, the limited radar service provided by Benson ATC due to unserviceable equipment has been identified as undesirable and RAF Brize Norton will continue to provide a TS service for Tutor aircraft operations until Benson's Watchman radar is repaired.

UKAB Note (1): The OX NDB (L)/DME 100° hold is a LH 1min racetrack inbound QDM 100.

UKAB Note (2): The Clee Hill radar recording at 1456:14, the time of the initial call by the C525 flight to Oxford ATC, shows the C525 5nm N of OX tracking 135° at FL80 with FL65 set in the Mode S SFL, whilst the Tutor is 7·8nm SE of Oxford tracking 330° indicating altitude 5800ft LON QNH 995mb. Eight seconds later the C525 is seen to commence a descent as the Tutor levels at 5900ft. The C525 then passes 3·4nm NE abeam OX still tracking 135° levelling at altitude 6000ft (FL65). At 1458:14 when the C525 is 5·5nm E of OX, it commences a R turn towards the Tutor, which is 2·7nm to its SW and is also starting a R turn, both ac indicating 6000ft. Just over 30sec later at 1458:46, just before the C525 pilot informs ATC of his TCAS avoiding action, the C525 is turning through heading 250° at 6000ft with the Tutor in its 1 o'clock range 1·2nm turning through 130° and about to pass ahead at the same level. Eight seconds later as the C525 steadies on a track of 260° its TCAS descent is seen through altitude 5800ft whilst the Tutor is tracking 170° in its 1130 position range 0·7nm level at 6000ft. The CPA occurs on the next sweep at 1459:02; the Tutor is 0·4nm S of and 400ft above the C525, which is descending through altitude 5600ft. Although the C525 pilot reported another ac entering the area from the NE causing another TCAS RA, the only traffic seen on the radar recording to the NE is a slow climbing Oxford departure tracking S. However the C525 pilot's reported avoidance L turn is seen to coincide with the Tutor turning R towards the N and descending slightly, shortly after the first TCAS encounter; STCA is triggered by both events.

UKAB Note (3): The C525 pilot was contacted (5 months post incident) to discuss elements of the incident found during the investigation. The pilot stated that he had previously been on a radar heading but was released late from London to Oxford and had been concerned that he had to be level at FL65 by the OX so he had continued SE'ly before turning towards the NDB, although he could not explain why it had taken a further 1min after levelling before commencing the turn. The ac was equipped with a fully electronic integrated avionics and LCD display system with moving map and electronic flight information including proprietary aviation charting. He explained that using the electronic Oxford IFR Terminal Approach Chart, the Danger Area was not displayed so he was unaware of his ac passing through D129.

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 operating and ATC authorities.

In the procedural environment at Oxford ATC the ATS provided by APP was dependent wholly on accurate and timely position reports and estimates. It was apparent, after correlating the RT transcript with the radar recording, that the C525 pilot had not reported his position accurately to Oxford APP. When the C525 pilot reported passing the OX the ac was in fact 3·4nm NE abeam on a SE'ly track level at FL65. Similarly, immediately post Airprox he had reported level at FL60 and passing through the hold when the radar shows the ac more than 5nm to the SE of the NDB. Members agreed that the exchange of information between ATC and pilots should accurately reflect the situation, enabling both parties to keep their SA updated. That said, the PS given by APP had provided the C525 pilot with positive instructions and information to facilitate his safe arrival into the

NDB hold and to assist him to build his mental picture of the traffic situation. APP had several ac below the C525 that were being provided with vertical separation from each other but as the C525 was at the top holding stack level there would have been a lengthy delay before it could have commenced an approach after stepping down in the hold as lower levels became vacated. It appeared from the RT call made by the C525 pilot, after initial contact, that his mental model was to position his ac for a visual approach to RW01. However this could only be actioned after APP had coordinated with ADC, which led to the C525 flight only being assigned FL65 for some time whilst the pilot positioned his ac towards the Oxford. Members agreed that the C525 pilot should have queried the controller's request for him to descend VFR post Airprox, as it was the pilot's responsibility to cancel his IFR plan. Although a visual approach can be flown under IFR, the requirements of MATS Part 1, detailed in the ATSI report, need to have been fulfilled.

Some Members believed that had the C525 pilot flown direct to the OX from the N, his ac would not have been in the same area as the Tutor and the Airprox would probably not have occurred. This view was not shared by the majority who, cognisant that a direct route would normally be flown to an NDB before taking up the hold, agreed that the C525 pilot's actions of delaying his turn towards the OX were acceptable and had not affected the ATC aspects of the situation. However, unbeknown to APP, the Tutor was manoeuvring in the area to the SE of Oxford. The Tutor was in receipt of a TS from Benson and, although both subject ac were squawking, the controller did not see the potential confliction between them. Ultimately, although the Tutor pilot might have expected to be informed about the approaching C525, he was responsible for his own separation from other traffic. He reported flying clear of cloud but the cumulus cloud structure had limited full horizon scanning. This may explain why he did not see the C525 out to his R when he commenced his R turn, which then placed his ac belly up to the approaching Citation. Similarly, although the C525 flight was IFR and being afforded separation from other IFR flights under a PS, within this Class G airspace its pilot was also responsible for his own separation from other VFR and non-participating traffic. The C525 pilot had turned R, when his ac was E of the OX, towards the manoeuvring Tutor. TCAS had generated an RA, owing to the Tutor's conflicting flightpath, and he had then seen the Tutor ahead and followed the 'descend' guidance, which led to the flight becoming IMC. Although the Tutor pilot did not see the C525, Members believed that both pilots had discharged their responsibilities to best of their abilities in the circumstances that pertained and that this Airprox had been a conflict in Class G airspace which had been resolved by the C525 pilot whose prompt and robust actions had been effective in removing any risk of collision.

Members expressed concern about the C525 flying through an active Danger Area D129 (H24). A Danger Area Information Service is available from Brize Norton but in the absence of updated information it should be assumed that the Danger Area is active up to its promulgated maximum height.

Post Meeting Note: The flight database company were contacted for clarification of aviation information that could be displayed on the EFIS on the C525. Terminal Charts are displayed statically on a MFD and the Oxford NDB (L)/DME 100 procedure does show D129 but the Brize CTR is not depicted. The moving map display does include Danger Areas and CAS boundaries.

Members could not account for the C525's second RA event. The radar recording does not show any traffic approaching the area from the NE that could have generated a TCAS warning. The recording does show the C525's avoidance L turn reported by the pilot, to the SE of the OX, shortly after the first TCAS RA/Airprox when the Tutor turns R onto a NW'ly track towards the C525 and descends slightly. The activation of STCA on both the Airprox incident and this second event, immediately before the avoidance L turn, suggests that it was the Tutor that triggered the second RA. However, this does not align with the C525 pilot's recollections of the geometry as he had turned L because of the TCAS RA target was to the NE i.e. his R.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace resolved by the C525 pilot using TCAS.

Degree of Risk: C.