

## AIRPROX REPORT No 2012021

Date/Time: 25 Feb 2012 1235Z (Saturday)

Position: 5148N 00120W (Final approach to RW01 @ Oxford/Kidlington - elev 270ft)

Airspace: CTR/ATZ (Class: D/G)

Reporting Ac Reported Ac

Type: HS125 SR22

Operator: Civ Comm Civ Pte

Alt/FL: 700ft↓ 1200ft↓  
QNH (1027hPa) QNH (1027hPa)

Weather: VMC CLOC VMC NR

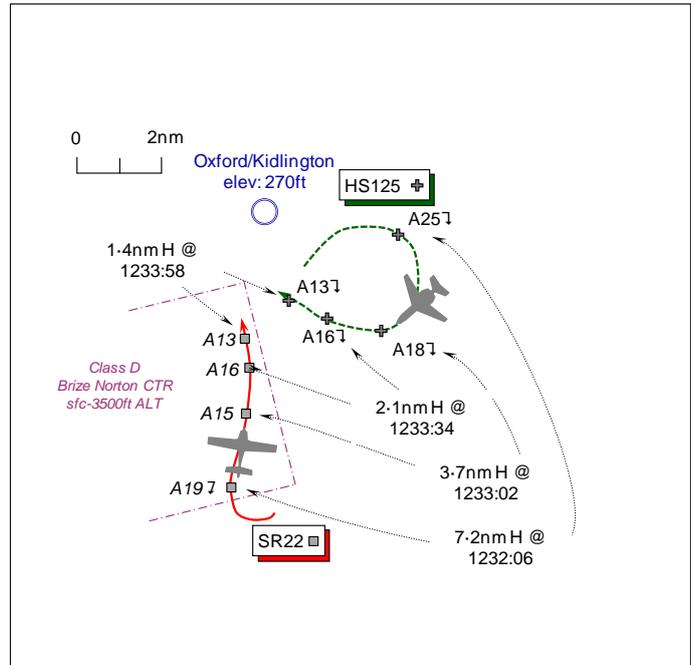
Visibility: 10km+ >10km

Reported Separation:

NK 5-700ft V/1nm H

Recorded Separation:

<1.4nm H



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE RAYTHEON HAWKER 800XP (HS125) PILOT** reports that they were on a short VFR positioning flight from Farnborough to Oxford/Kidlington following a charter flight that had terminated at Farnborough. The in-flight weather was good and reported at Oxford as: visibility 10km+, with FEW clouds at 2900ft. They had opted for a visual join and the 1<sup>st</sup> Officer was the PF at the time of the Airprox. Oxford TOWER was providing a PS/BS on 125.325MHz. A squawk of A7000 was selected with Modes C and S on; TCAS II is fitted.

From overhead, they made a descending right hand orbit to the E of the A/D to join on a R base for RW01. ATC reported their ac was in sight from the Tower during this period and they were cleared to land as they commenced their turn onto final approach. There was no other traffic reported in their vicinity at this point. On short final, heading 010° at 140kt descending through 700ft less than 1min before landing, ATC transmitted on the RT 'Aircraft on finals identify?' He assumed they meant his HS125, but this confused them because they had been cleared to land and previously reported as 'in sight' by ATC; he answered with '[HS125 C/S] short finals to land'. ATC then replied; 'no, the other aircraft on finals, identify?'

By this time they were less than half a mile from the threshold, so it was clear the other ac was behind them. ATC asked the pilot of the other ac – the Cirrus SR22 - if he was visual with their HS125, who replied that he was. He believes ATC then instructed the SR22 pilot to go-around and he remembers hearing the pilot acknowledge this transmission.

After landing they listened to the RT as ATC told the SR22 pilot that he had mistakenly flown the wrong procedure and had not only come close to their HS125 on their final approach but had also, more than likely, infringed the Brize Norton CTR. As they taxied-in, his 1<sup>st</sup> Officer asked ATC how close to them the SR22 had been when first sighted by ATC, the controller replied 'approximately half a mile'.

The HS125 has a final approach speed of about 140kt and being a light single engine ac the SR22 must be closer to 70kt [100kt reported]; therefore, as they made their turn onto final the SR22 must have been extremely close to them to have flown to within half a mile astern as they pulled ahead

onto short final. TCAS gave them no warning - neither a TA nor RA was enunciated. Neither he nor his colleague saw the SR22 during the period of the Airprox and he assessed the Risk as 'medium'.

He suggested that a radar installation at Oxford would have prevented this Airprox as ATC would have known the SR22 pilot was flying the wrong procedure as soon as he started. His ac is white with blue stripes; the HISLs, anti-collision beacon nav and landing lights were all on.

**THE CIRRUS SR22 PILOT** reports he was flying solo in VMC and in receipt of a BS from Oxford APP on 125.325MHz. His ac is coloured white; he did not report the status of his aeroplane's lighting.

He was descending on the ILS for RW19 when ATC called to advise of a RW change due to the surface wind backing. He misheard the instruction from the controller, which was for him to use the RW100 (*sic*) procedure, and changed his approach to that for the NDB procedure to RW01.

On final descent through 1200ft QNH (1027hPa) heading 010° at 100kt, bearing 190° from the OX NDB at 1.5 – 2nm DME, he saw a business jet – the HS125 - on final approach about 1nm ahead and 500-700ft below his aeroplane, so he immediately broke off the approach and turned R to avoid it. His TCAS did not activate and the controller also reported the HS125 ahead of his ac. Minimum separation was 1nm horizontally and 500-700ft below his ac; he assessed the Risk as 'low'.

**THE OXFORD COMBINED AERODROME AND APPROACH CONTROLLER (APP)** reports that the ADC position was bandboxed with APP operating on 125.325MHz. The SR22 pilot was booked in for 2 ILS training approaches on RW19. After the 1st approach the RW in use was changed to RW01 and the SR22 pilot elected to continue training by flying the NDB 100 Procedure and circling to land on RW01. She checked that the pilot had the correct approach plates to which he replied 'affirm'. After 8min in the hold she cleared the SR22 for the NDB 100 Procedure, again emphasising the circle to land on RW01. When the SR22 pilot reported 'beacon outbound' the DF indication was to the N of the OX. Meanwhile, the HS125 crew called SE of the A/D requesting a VFR R base-leg join for RW01; she approved the R base-leg join for the HS125 and the ac continued inbound towards the A/D. The SR22 pilot reported 'base turn complete' and was instructed to report at 4 DME; the pilot's intentions were obtained, which was a missed approach and depart the area. Missed approach instructions were issued to the SR22 pilot, which involved the ac flying overhead the A/D W to E and departing to the E, which was acknowledged. When the HS125 crew reported on right-base for RW01, she cleared the flight to land and was awaiting the 4DME report from the SR22 pilot, which she believed was on the FAT of 100° as per the procedure.

As she watched the HS125 on final for RW01 an ac was observed about half a mile behind it, which by checking the DF and pilot report she established was the SR22. A 4DME report had not been passed by the SR22 pilot, who had flown the wrong procedure and flown the NDB RW01 procedure not the 100° procedure for which they had been cleared.

The SR22 was sent around immediately and TI was passed. The HS125 crew continued inbound for a normal landing; no TCAS RA or TA was reported. The SR22 went around and she advised the pilot that he had flown the incorrect procedure. The SR22 pilot departed to the E and changed frequency to Denham at 1239 upon leaving the ATZ. She contacted Brize Norton to advise them that the SR22 crew had flown the RW01 NDB Procedure by mistake (Oxford ATC is required to obtain permission from Brize Norton ATC to clear ac for this procedure as it infringes the Brize Norton CTR). Brize Norton reported they had no traffic to affect the ac on this occasion.

UKAB Note (1): The UK AIP at AD 2-EGTK-1-5 promulgates the Oxford/Kidlington ATZ as a circle radius 2nm centred on the midpoint of RW01/19, extending from the surface to 2000ft above the aerodrome elevation of 270ft and active in Winter, daily, from 0630 – 2230.

**ATSI** reports that the Airprox occurred about 1.9nm SSW of Oxford Airport on final approach to RW01 at the boundary of the Oxford ATZ; the HS125 was inside the ATZ and the SR22 just exiting

the Brize Norton CTR. The HS125 was inbound VFR to RW01 on a positioning flight from Farnborough and in receipt of a BS from Oxford APPROACH. The SR22 was inbound IFR from Denham for training, having pre-booked two ILS approaches for RW19. After the SR22 completed the first hold and ILS for RW19, the runway in use changed to RW01. On the second approach the SR22 was cleared for the NDB (L) DME100 hold and approach to the A/D, which required the SR22 to extend the hold to the W, letting down in the procedure. The SR22 was in receipt of a PS.

There are two holds at the Oxford NDB (OX):

- a) A one-minute racetrack pattern approaching the NDB (L) OX on a track of 100°(M) turning L at the 'OX', used for the NDB (L) DME 100° and the NDB (L) DME RW01 approach.
- b) A one-minute racetrack pattern approaching NDB (L) OX on a track of 339°M, turning right at the 'OX', used for the NDB (L) DME RWY 19 and the ILS/DME/NDB (L) RWY 19 approach.

There are five published procedures at Oxford:

- a) ILS/DME/NDB(L) RW19.
- b) LLZ/DME/NDB(L) RW19.
- c) NDB(L)DME RW19.
- d) NDB(L)DME 100° to Aerodrome.
- e) NDB(L)DME RW01.

The Oxford Manual of Air Traffic Services, Part 2, Page 4-7, states that: 'when any runway other than RW19 is in use, the active procedure will be the NDB (L) DME 100°.

The AIP entry for the NDB(L)DME RW01 procedure requires the permission of Brize RADAR as it transits their CTR. The AIP page (10 Mar 11) AD 2-EGTK-8-1, Instrument Approach Chart states that the 'procedure is not available for training'.

The Oxford controller reported operating a combined Aerodrome and Approach service, without the aid of surveillance equipment. Workload was considered to be medium/heavy.

The Unofficial Oxford weather for 1210Z: 30008KT 9999 BKN027 10/03 Q1027  
The Brize Norton METAR for 1212Z: 32005KT 9999 SCT025 09/02 Q1027 BLU NOSIG=

At 1204:45, the SR22 was established in the hold waiting to commence the first of two ILS approaches for RW19. The controller informed the pilot that due to the wind, the runway was soon to be changed to RW01 and requested the pilot's intention after the ILS. The SR22 pilot replied, *"..after the ILS..can I do an NDB approach on runway 0-1."* The controller responded, *"you can do an NDB approach for the 1 hundred procedure it's the same as the 0-1 hold but it's procedure out to the west of the airfield just let me know you've got the correct plates for that."* The pilot acknowledged, *"..affirm I have the correct plates so..you would I will do a..NDB approach for..0-1."* The controller responded, *"Affirm I'm happy for you to fly the first ILS but..I may have to break you off early and send you into the visual pattern just let me know your intentions."* At 1206:25, the controller broadcast the runway change with RW01 in use.

At 1211:21, the controller asked the SR22 pilot if he was still in the hold. The SR22 pilot replied, *"..sorry negative..I'm just er localiser established apologies."*

At 1213:57, the SR22 pilot reported at 4 DME and the controller replied, *"if you break off to the left and then you can establish a climb to altitude 3 thousand 5 hundred feet back to the OSCAR XRAY and report entering the 1 Hundred Hold."* The pilot replied, *"..breaking off to the left climb to 3 thousand feet and then returning to Oscar report in the 1 Hundred Hold ?????? ??????"* The controller corrected the level, *"[SR22 C/S] 3 thousand 5 hundred please and how many holds do you require."* The pilot gave a correct readback and requested one hold.

At 1220:52, the controller asked if the SR22 had taken up the hold and the pilot responded, “*..just outbound to pick up the hold [SR22C/S]*”. The pilot was instructed to report ready for the procedure. Recorded radar data shows the SR22 outbound and correctly positioned in the NDB (L) DME 100° hold. At 1225:34, the SR22 pilot reported ready for the procedure and the controller instructed the pilot to continue in the hold. At 1226:22, the controller gave the following clearance, “[SR22C/S] *cleared NDB Locator 1 Hundred procedure with a circle to land for Runway 0-1 report beacon outbound.*” The pilot acknowledged, “*..cleared for the Locator Procedure for er the One Hundred report beacon outbound [SR22C/S].*”

At 1228:02, the SR22 pilot reported beacon outbound and shortly afterwards reported descending with the procedure. Recorded radar data shows the SR22 tracking eastbound from the ‘OX’ and that instead of making a L turn for the NDB (L) DME 100 procedure, the SR22 turned R for the NDB approach for RW01.

The SR22 pilot indicated that after the approach he required a low approach and return to Denham. The controller responded, “[SR22C/S] *roger be the low approach then off the 1 Hundred Procedure to fly low level over the airfield and track eastbound remaining clear of Weston on the Green and then a VFR departure to Denham.*” The pilot replied, “*..low approach and then fly eastbound and..then departure to Denham [SR22C/S].*” The SR22 was instructed to report base turn complete.

At 1229:20, the HS125 crew contacted Oxford, reporting VFR inbound and requesting a visual join for RW01. The HS125 pilot was instructed to remain outside the Brize CTR routing to the E and then R base for RW01. This was acknowledged by the HS125 pilot. Radar shows the HS125 descending to the E of the A/D.

At 1232:12, the SR22 pilot reported base turn complete and the controller replied, “[SR22C/S] *roger report..commencing the..go around on the 1 Hundred Procedure.*” This was acknowledged correctly. Radar recording shows the SR22, S of the airfield on a 6.3nm final for RW01 and inside the Brize Norton CTR. The controller’s expectation was that the SR22 would be approximately 6.5nm W of the airfield. At this point no TI had been provided to either the SR22 or HS125. At 1233:22, the HS125 reported on right base and the controller issued a landing clearance with surface wind 310/07kt.

At 1234:18, radar shows the SR22 fading from radar, on a 2.5nm final for RW01, with the HS125 turning onto final 0.6nm ahead of the SR22. The HS125 also fades from radar. The indicated ground speed of the SR22 was 106kt and the HS125 as 126kt. The controller’s written report indicated that an ac was sighted half a mile behind the HS125 and at 1234:44, the controller transmitted, “*Aircraft on final for 0-1 report yourself.*” The controller believed that the SR22 was to the W of the airfield.

At 1234:50, the HS125 pilot reported short final and the SR22 pilot reported going around. The controller responded, “[SR22C/S] *the wrong procedure you were instructed to fly the 0 the 1 Hundred Procedure with a circle to land for 0-1.*”

After the HS125 landed, the pilot reported that there wasn’t a problem, he didn’t have the other traffic on TCAS and having been cleared to land, continued the approach to land. The SR22 pilot returned to Denham VFR.

The SR22 pilot’s written report stated that, “*I misheard the instruction (which was for me to use R/W 100) and changed my approach for R/W 01*”. Brize Norton were advised of the incident and reported that they had no traffic to affect and that on this occasion there wasn’t an issue.

The SR22 pilot had mistakenly carried out the NDB (L) DME **RW01 procedure**, instead of the NDB (L) DME **100° to Aerodrome procedure**. This resulted in the SR22 infringing the Brize Norton CTR and turning onto final for RW01, bringing it into conflict with the HS125.

It was not clear if the SR22 pilot was familiar with the NDB (L) DME 100° to Aerodrome procedure or fully understood that this was the procedure specified by ATC. The SR22 pilot had pre-booked and planned for two ILS approaches.

When the controller explained the runway change the following RT exchange occurred:

SR22 pilot: *“erm after the ILS erm can I do an NDB approach on runway 0-1.”*

Controller: *“you can do an NDB approach for the 1 Hundred Procedure it’s the same as the 0-1 hold but it’s procedure out to the west of the airfield just let me know you’ve got the correct plates for that.”*

SR22 pilot: *“Er affirm I have the correct plates so erm you would I will do a er NDB approach for er 0-1.”*

The pilot’s last response mentioned having the correct plates, but refers to the NDB approach for RW01. This was not challenged by the controller. However, when the SR22 pilot reported ready for the procedure, the controller gave the following clearance:

Controller: *“[SR22C/S] cleared NDB Locator 1 Hundred Procedure with a circle to land for Runway 0-1 report beacon outbound.”*

SR22 pilot: *“er cleared for the Locator Procedure for er the 1 Hundred report beacon outbound “[SR22C/S].”*

The controller used the term ‘the 1 Hundred Procedure’ on a number of occasions. The SR22 pilot’s written report stated, *“I misheard the instruction (which was for me to use RW 100) and changed my approach for RW01”*. The pilot’s reference to runway 100 rather than the 100 procedure also indicated unfamiliarity with the procedures at Oxford.

The SR22 pilot had flight planned and prepared for two training ILS approaches on RW19. When the runway changed the pilot requested an NDB for RW01. It is considered that it was very likely that at this point the pilot believed he was to expect the NDB approach for RW01. When the pilot was subsequently cleared for the NDB Locator 1 Hundred procedure he may have been predisposed into thinking that the clearance was for the NDB approach to RW01.

The controller was not aware that the SR22 pilot had carried out the incorrect procedure and entered the Brize Norton CTR. No warning was received from Brize Norton who subsequently reported that they did not have any conflicting traffic.

The controller had an expectation that the SR22 pilot would be letting down and approaching the airfield from the W. The SR22 pilot reported base turn complete (normally 6.5nm W), whilst the HS125 was joining on R base for RW01 from the SE. The controller did not believe at that point that a confliction existed.

CAP774 Procedural Service, Chapter 4, Page 5, Paragraph 5, states:

*‘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.’*

The Airprox occurred when the SR22 pilot was cleared for the Oxford NDB (L) DME 100° to Aerodrome procedure and mistakenly flew the NDB (L) DME RW01 procedure. This resulted in the

SR22 incorrectly turning onto final approach for RW01 into conflict with the HS125, which was also turning onto final for RW01.

A number of factors were considered to be contributory:

The pilot had prepared for two training approaches using the ILS for RW19 and may not have been fully prepared for the short notice change of runway.

The pilot misunderstood and may not have been familiar with the Oxford NDB 100 procedure referring in his written report, to an approach for RW100.

The SR22 pilot had requested and was likely predisposed into thinking that he was cleared for NDB approach for RW01.

The controller missed the opportunity to challenge the pilot's initial misunderstanding that he had the 'correct plates' and would do an NDB approach for RW01. However the pilot was subsequently given a specific clearance for the "*..NDB Locator 1 Hundred procedure..*" and the controller used the term "*..1 Hundred procedure..*" a number of times.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar video recordings and reports from the air traffic controller involved and appropriate ATC authority.

It was evident to the Board that this Airprox had stemmed from the SR22 pilot's incorrect selection of the appropriate approach procedure to use at Oxford following the RW change. However, it was unfortunate that APP had missed an opportunity to correct the SR22 pilot when the pilot advised that, "*..I have the correct plates so..I will do a..NDB approach for..0-1*". Nevertheless, the subsequent clearance issued by APP for the NDB (L) 100° to A/D procedure albeit that it was issued as, "*..cleared NDB Locator 1 Hundred Procedure with a circle to land for Runway 0-1..*" should have made it evident to the SR22 pilot the approach he was being cleared to fly by the controller. Undoubtedly the similarity in the nomenclature of the two procedures did not help and a pilot Member suggested that if the controller had emphasised that the NDB (L) DME RW01 procedure was not available to the SR22 pilot, for example, it might have given him a clearer understanding of what approach he was being cleared to fly. It seems the SR22 pilot did not appreciate that training NDB approaches are not permitted on RW01 and a GA pilot Member suggested that there was probably an element of unfamiliarity with the Oxford procedures here. However, the fact that the NDB (L) DME RW01 procedure is not available for training is clearly marked on the TAP chart. The GA pilot Member stressed that it was important to conduct thorough pre-flight planning when contemplating IFR training, so it seemed that the SR22 pilot might have been caught out by the RW change onto RW01 and had not briefed himself adequately on the specific detail of the Oxford procedures when the other RW was in use.

Controller Members noted that the APP controller had not mentioned the use of VDF; this often under-rated aid is very useful in the procedural environment and could have highlighted to the controller that the SR22 pilot was approaching the A/D from the S and not the W when he reported base turn complete. A controller Member emphasised the importance of accurate DME calls from pilots during procedural approaches as these are the only means the controller has of deducing at what stage the ac is on the approach and upon which any TI will be based. A pilot Member questioned why TI had not been passed to the HS125 crew about the SR22 earlier, but controller Members suggested that APP might normally ask for a 4 DME call from the SR22 pilot to gauge the position of the instrument approach against the HS125 on final. However, here APP had asked the SR22 pilot to advise when he was commencing his go-around, which was after APP recognised what had occurred. As it was, APP was unaware that the SR22 pilot was executing the wrong procedure and believed the SR22 pilot was to the W of the A/D, flying the NDB (L) DME 100° to Aerodrome

until the controller identified the SR22 on final visually, behind the HS125, just after 1234:44. The last opportunity the HS125 crew might have had to sight the SR22 was when the latter was 3.7nm away and 300ft below them as they turned R through W. However, it was the controller's transmission that alerted them to the presence of the SR22 astern a little later as they were on short final to land. For their part the HS125 crew had little impact on the outcome of this Airprox at all, which the Members agreed resulted because the SR22 pilot did not fly the cleared procedure and flew into conflict with the HS125. Unfortunately both ac contacts fade on recorded radar data as they descend below 1300ft and the CPA is not apparent. However, neither ac received TCAS alerts and the HS125 on final had been spotted by the SR22 pilot, who reports seeing the executive jet about 1nm ahead. Consequently, the SR22 pilot elected to break off the approach and turn R out of the pattern, which convinced the Members that no Risk of a collision had existed in these circumstances.

**PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: The SR22 pilot did not fly the cleared procedure and flew into conflict with the HS125.

Degree of Risk: C.