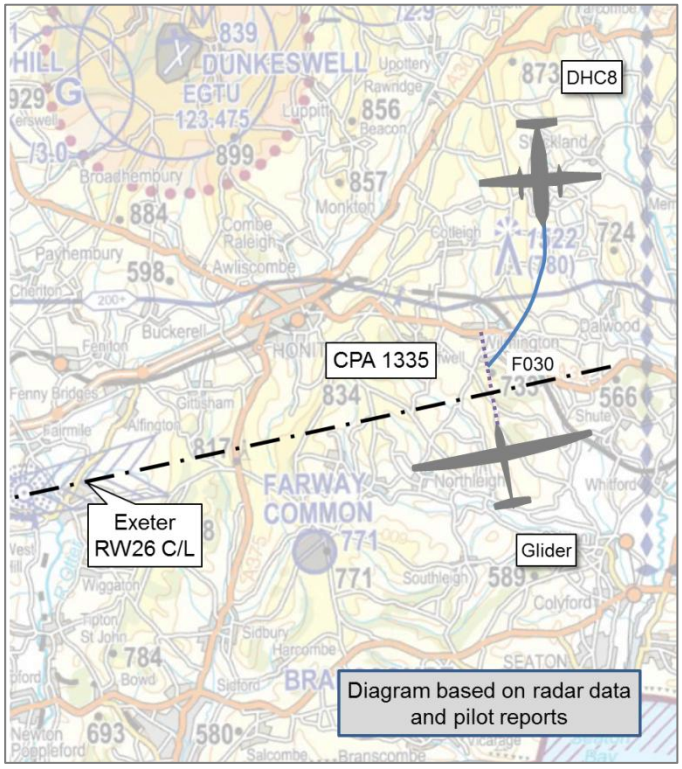
AIRPROX REPORT No 2015001

Date: 2 Jan 2015 Time: 1335Z Position: 5046N 00309W Location: 11nm NE Exeter Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DHC8	Glider
Operator	CAT	Unknown
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Deconfliction	
Provider	Exeter	
Altitude/FL	NK	
ACAS/TAS	TCAS II	
Alert	Nil	
Transponder	A, C, S	
Reported		
Colour	NK	
Lighting	NK	
Conditions	VMC	
Visibility	NK	
Altitude/FL	3000ft	
Altimeter	QNH	
Speed	NK	
Separation		
Reported	NK V/400ft H	
Recorded	NK	



THE DHC8 PILOT reports that he was inbound to Exeter in receipt of a reduced Deconfliction Service (SSR only) with no primary surveillance available. As he intercepted the RW26 localiser at 3000ft in a busy phase of flight, a glider appeared underneath them heading approximately north. The glider appeared to be approximately 300-500ft from them. There was a line of cloud at 3500ft, under which the glider was located. He informed the controller and, once clear, they descended on the glideslope.

He assessed the risk of collision as 'High'.

THE GLIDER PILOT was not traced.

THE EXETER APPROACH RADAR CONTROLLER reports that the DHC8 pilot requested a Deconfliction Service and was told this would be provided on leaving Controlled Airspace (CAS) but without Primary radar (the primary surveillance was NOTAM'd as unserviceable). It would be a reduced Deconfliction Service with SSR only. The DHC8 pilot was vectored around Dunkeswell airfield, 10nm northeast of Exeter, which pointed the aircraft towards departing Exeter traffic climbing to FL70. The pilot was advised and descended to 1000ft above it. Once clear, the DHC8 pilot was descended further, but only to FL40 due to aircraft operating at Dunkeswell on the assumption that the DHC8 could be turned further east, clear of Dunkeswell, once it was beneath the level of the Exeter departure. The DHC8 pilot was then descended to 3000ft which is used in SSR-only operations for SSR coverage reasons, and asked to report on the localiser. At 10DME the pilot reported established, and that a glider had been seen at "our level, slightly above?" No further comments were passed, and the pilot was cleared to descend on the glide path.

Factual Background

The Exeter weather was:

METAR EGTE 021320Z 31010KT 9999 FEW035 10/03 Q1034=

Analysis and Investigation

CAA ATSI

CAA ATSI had access to Exeter RTF and area radar recordings together with reports from the DHC8 pilot and the Exeter Radar controller. No report was received from the glider pilot.

Devon and Somerset (North Hill) Gliding Club is situated 10nm north-east of Exeter Airport. The Exeter Manual of Air Traffic Services (MATS), Part 2 states:

> 'A gliding site is established at North Hill, bearing 040°T, range 10nm and care should be exercised when positioning aircraft on a right hand base leg for Rwy26.
>
> ATC are normally notified by telephone when gliding is to take place at North Hill and when their Annual Gliding Competition is in progress. The AUS normally co-ordinate these events in advance and while they are in progress. The glider site organiser passes daily movements and intentions of the gliders'.

A Glider Site representative indicated that Exeter Airport and the Gliding Club have a very good working relationship. They believed that two motor-gliders were operating during the period. One of these was in the vicinity of the airfield, landing at 1337 (just after the occurrence) and the second was conducting an air experience flight and judged to be operating close to the airfield. Neither of these aircraft was believed to have been transponder equipped. Exeter ATSU also indicated that they have an excellent working relationship with the Gliding Club and considered it extremely rare for a glider from North Hill Gliding Club to fly in the area where the Airprox occurred (on the RW26 approach) and there would have been no reason for the controller on that day to have expected a glider to be flying in that area. There was no record of any notification of glider activity, and there were no recorded telephone calls received from the Gliding Site. Area radar recording showed other intermittent contacts operating within 20nm of Exeter, but it was not known where these aircraft were operating from.

Exeter ATSU reported that their Watchman Primary Radar System had developed a fault, the supplier was closed due to the Christmas break and consequently there was an unexpected delay which resulted in the Primary Radar being out of service until 5 Jan 2015. A Notam (C6552/14) had been promulgated indicating that SSR only was available.

Q) EGTT/QSPLT/IV/BO/A/000/999/5044N00325W005 B) FROM: 14/12/23 17:05 C) TO: 15/01/05 17:00 E) PSR U/S. SSR ONLY. SRA NOT AVBL	C6552/14

Provided pilots are made aware of the limitations of the service, SSR may be used to provide horizontal separation in accordance with MATS Part 2[1]. The Exeter MATS Part 2 states that in the event of a failure of Primary Radar controllers can continue to provide a service to transponding aircraft. Pilots must be made fully aware of the limitations of the service. All occasions of SSR-only operation greater than 3 days shall be notified to SARG[2]. CAA SARG had been notified in accordance with the unit MATS Part 2.

The SSR radar head used by Exeter is Burrington situated 24.5nm north-west of Exeter Airport. The ATSU provides additional guidance to controllers for SSR only operations and states[3]:

[1] MATS, Part 1, Section 1, Chapter 3. Paragraph 10B.1(1)
[2] Exeter MATS, Part 2, Page 107, Paragraph 4.4.12
[3] Exeter Radar Services SSR only, Paragraph 1.4 & 1.5

'Controllers are to use standard radar phraseology as published in MATS Part 1, E (attach) [Note: this is now incorporated into CAP413.]

When providing a radar service using SSR only, controllers will make pilots aware of the limitations of the service by using the phraseology "*Reduced Traffic Information SSR only."*

With regard to the implications of reduced radar and procedural Air Traffic Control provision on aircraft operations in Class G airspace, the CAA issued SN2014/005 with the following introductory paragraph (1.1):

'Review and analysis of recent Airprox events has indicated that some pilots may not be fully aware of the implications of the Air Traffic Service (ATS) provision on flights in Class G airspace when receiving either a Procedural Service, or a 'reduced' Radar Service, including where Secondary Surveillance Radar (SSR) only is employed. Due to the uncontrolled and 'unknown' Class G airspace environment, it is important that pilots recognise, fully understand, and appropriately manage, any limitations or reductions in ATS capability'.

At 1329:04, on the pilot's first contact, the DHC8 was 24.5nm north of Exeter. The pilot reported descending to FL80 in receipt of information 'PAPA' and requested a Deconfliction Service on leaving CAS. The following RTF exchange occurred:

ATC *"Roger* (DHC8 C/S) *good afternoon to you information PAPA correct vectors ILS runway two six what service would you like outside controlled airspace we're using SSR only".*

DHC8 *"Er Deconfliction Service or nearest* (DHC8 C/S)*."*

ATC *"Roger* (DHC8 C/S) *that's copied and on leaving it'll be a Reduced Deconfliction Service using SSR only turn left heading one five zero degrees".*

The Exeter controller continued to provide the DHC8 pilot with descent, vectors and information concerning other transponding aircraft displayed on the controller's situational display.

At 1333:30 the DHC8 pilot was descended to 3000ft and at 1333:50 was instructed to make a right turn heading 220° to report localiser established. The DHC8 was 13.4nm from touchdown and the controller then became involved in an RTF exchange with another transit aircraft and requested that this aircraft complete a right-hand orbit in order to provide deconfliction from a departure.

At 1334:55 the DHC8 was 12nm from touchdown. Area radar did not show any glider activity. (Figure 1.)

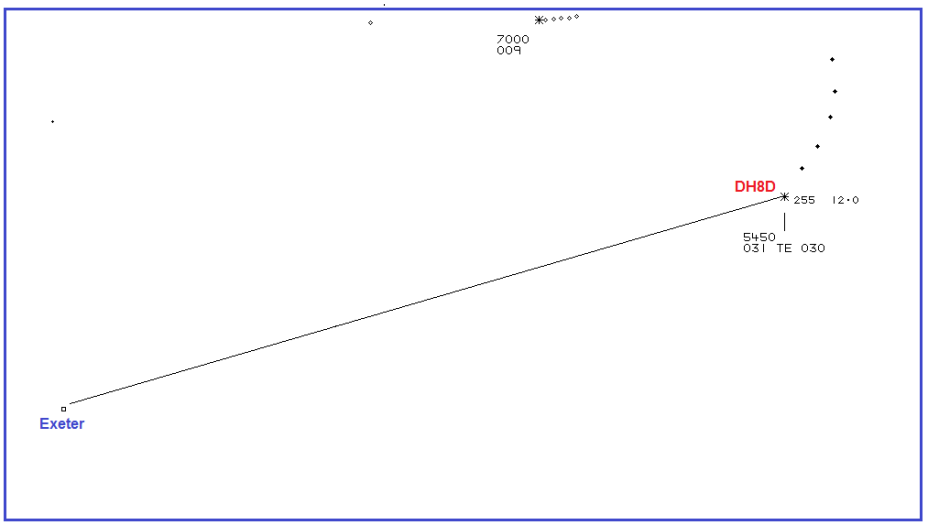


Figure 1 – Swanwick MRT at 1334:55

At 1334:57 the following RTF exchange occurred:

DHC8 *"And Tower* (C/S)*-er Radar* (DHC8 C/S) *there's an a glider just operating right on the extended centreline the localiser we just passed him".*

ATC "(DHC8 C/S) *roger that's copied er and er understood and erm we're using SSR only obviously er unable to pass that traffic to you thank you do you have any erm height readout er approximate height".*

DHC8 *"And he's roughly at our level now three thousand feet maybe slightly above and er just north of the centreline about nine ten DME".*

ATC *"Thank you and you can descend on glidepath".*

DHC8 *"Cleared glide* (DHC8 C/S)*".*

The single radar source at Burrington showed a primary contact at 1335:51 and 1335:55 which were considered to have been from a glider tracking north-west. (Figure 2.)

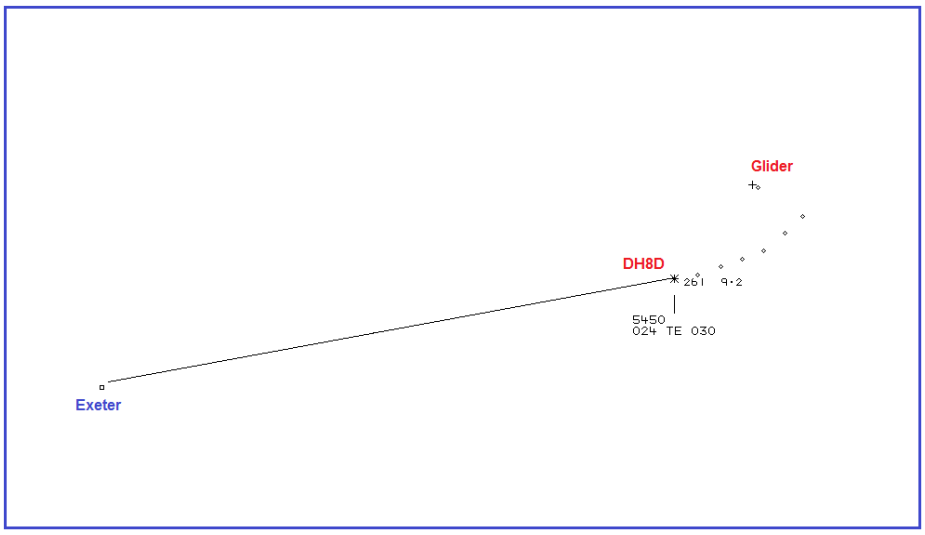


Figure 2 – Burrington single source radar at 1335:55

The DHC8 pilot continued without further incident and was transferred to Exeter Tower.

The Exeter controller operating SSR only would not have been aware of the glider and was therefore unable to pass Traffic Information or warning to the DHC8 pilot.

The DHC8 pilot was operating in Class G airspace where:

> 'Regardless of the ATS being provided, pilots are ultimately responsible for collision avoidance and terrain clearance. ATS provision is constrained by the unpredictable nature of the uncontrolled airspace environment within which it is not mandatory for a pilot to be in receipt of an Air Traffic Service'[4].

Radar was not able to show the exact geometry of the encounter. The DHC8 pilot's written report indicated that he was aware that no primary radar was available and was operating in VMC. The DHC8 pilot reported intercepting the localiser at 3000ft and sighting the glider which was below and moving away to the north.

Provided pilots are made aware of the limitations of the service, SSR may be used to provide horizontal separation. CAA SN2014/005 (see Annex A) provides guidance and states that:

[4] CAP 774, Paragraph 1.2.

'When in receipt of a SSR only service in Class G airspace, ATC will only be aware of aircraft that are transponding. Aircraft that are not equipped with a transponder, or the transponder has not been selected to transmit, will not be detected, and therefore ATC are unable to warn pilots of their proximity. Such aircraft would also not be able to be detected by ACAS[5].

All pilots should ensure that they understand the limitations inherent in a Procedural Service or reduced Radar Service. In such circumstances, pilots should take appropriate action to ensure the safety of their flight, specifically with regard to avoidance of aerial collision.'[6]

The DHC8 pilot had requested the best service available and the controller in agreeing to provide a Deconfliction Service used the following phraseology: "*Reduced Deconfliction Service using SSR only".*

The following phraseology is currently promulgated in CAP 413 (6.79):

"Reduced traffic information SSR only".

In examining this phraseology, the controller had combined the phraseology for the provision of a Deconfliction Service with that for the reduced service. It was noted that prior to the introduction of ATSOCAS and prior to 12 March 2009, the MATS Part 1 promulgated the following phraseology for use in such circumstances:

"Limited Radar Advisory/Information Service. Traffic information and (where applicable) avoiding action of squawking aircraft only."

There is a requirement for ATC to ensure that pilots are made aware of the limitations of the radar service when using SSR only. CAA ATSI considered that the phraseology specified in CAP413 may need to be adapted when providing SSR only within Class G uncontrolled airspace, where the environment can be complex, unpredictable and where the controller needs to agree the level of service and ensure that the pilot is made aware of the limitations of the service being provided (Phraseology).

CAA ATSI considered it would be appropriate to conduct a review of this phraseology in order to assess whether the current phraseology is sufficiently adequate to alert pilots to the risks associated with SSR only radar services outside CAS.

CAA ATSI therefore recommended that the CAA ATC Procedures and Phraseology Working Group review the CAP413 (6.9) phraseology in order to:

'Assess whether it is sufficiently adequate to ensure that pilots are made aware of the limitations and risks associated with SSR only radar services outside controlled airspace, and consider whether a change should be made to CAP413, or whether MATS Part 1 should specify that individual ATS units should include appropriate phraseology in their MATS Part 2.'

UKAB Secretariat

Both pilots shared an equal responsibility for collision avoidance and not to fly into such proximity as to create a collision hazard[7]. The DHC8 pilot was required to give way to the glider[8].

[5] CAA SN2014/005, Paragraph 3.3.
[6] CAA SN2014/005, Paragraph 4.4.
[7] SERA 3205, Proximity.
[8] SERA 3210, Right of Way.

Comments

British Gliding Association

The UKAB Glider member reports that he spoke to the Gliding Site at North Hill. Two of the three gliders flying that day were carrying flight recorders and he has copies of their traces. The third glider was a low performance K13 and he has spoken to its pilot. He believed that it was most unlikely the pilot went any further from the site than the other two. Plotting the traces and the estimated location of the Airprox showed clearly that neither of these gliders were anywhere nearby. He wondered whether it was possible that the DHC8 pilot was mistaken in identifying the other aircraft as a glider rather than a white, slender-winged powered aircraft.

Summary

The Airprox occurred in Class G airspace 11nm north-east of Exeter airport between an inbound DHC8 and an unknown glider. The DHC8 pilot, under VMC, was intercepting the ILS localiser for RW26 at 3000ft. and sighted the glider below and moving away to the north. The DHC8 pilot had been informed that Exeter ATC were operating without Primary Radar. The glider was undetected by Exeter radar, which was operating SSR only, and was not capable of showing non-transponding aircraft. Consequently, the Exeter controller was unable to provide any Traffic Information or warning to the DHC8 pilot.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the DHC8 pilot, the controller concerned, area radar and RTF recordings and reports from the appropriate ATC and operating authorities.

The Board noted that the DHC8 pilot had been aware that he had been receiving a reduced Deconfliction Service on SSR only and had appeared to be aware of its implications. The Board opined that although he had probably been startled to see a glider whilst he had been approaching the ILS at Exeter, the glider pilot was entitled to operate in that airspace, which was Class G, and was not specifically adjacent to the Exeter ILS feathers on the map.

The Board considered it was unfortunate that the glider pilot could not be traced or had not filed a report. It was apparent from the action taken by the BGA member that the glider had not come from the local Gliding Site at North Hill. The Board opined that perhaps the glider pilot had not seen the DHC8 or, if he had become visual, there may have been, in his opinion, sufficient separation between the aircraft to warrant not writing a report.

The Board were aware that the controller had not been able to issue Traffic Information to the DHC8 pilot. He had been operating SSR only and the glider had not been transponding. This lack of SSR returns had also prevented the DHC8 pilot receiving any TCAS alerts. Consequently, the DHC8 pilot had no warning of the proximity of the glider, and only saw it when it had appeared clear of cloud. The Board considered that the cause of the Airprox was therefore a late sighting by the DHC8 pilot. Turning their attention to the risk, the Board considered that there was not sufficient information to categorise the risk; there was only one person's assessment of the separation, and no radar recording of the event. Furthermore, without the glider pilot's report, it was not possible to know if he had taken any action to prevent the aircraft colliding. Without sufficient information being available the Board agreed that the Airprox should therefore be assessed as risk category D.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the DHC8 pilot.

Degree of Risk: D.

Civil Aviation Authority

SAFETY NOTICE

Number: SN–2014/005

Issued: 01 May 2014

Implications Of Reduced Radar And Procedural Air Traffic Control Provision On Aircraft Operations In Class G Airspace

This Safety Notice contains recommendations regarding operational safety.

Recipients must ensure that this Notice is copied to all members of their staff who need to take appropriate action or who may have an interest in the information (including any 'in-house' or contracted maintenance organisations and relevant outside contractors).

Applicability:	
Aerodromes:	Not Primarily Affected
Air Traffic:	All ATS Providers
Airspace:	Not Primarily Affected
Airworthiness:	Not Primarily Affected
Flight Operations:	All AOC Holders, PAOC Holders and General Aviation Pilots
Licensed/Unlicensed Personnel:	All ATCOs, FISOs, Pilots and Approved Training Organisations

1 Introduction

1.1 Review and analysis of recent Airprox events has indicated that some pilots may not be fully aware of the implications of the Air Traffic Service (ATS) provision on flights in Class G airspace when receiving either a Procedural Service, or a 'reduced' radar service, including where Secondary Surveillance Radar (SSR) only is employed. Due to the uncontrolled and 'unknown' Class G airspace environment, it is important that pilots recognise, fully understand, and appropriately manage, any limitations or reductions in ATS capability.

1.2 Within Class G airspace, regardless of the ATS being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should **always** consider ATS provision to be constrained by the unpredictable nature of this environment. Such unpredictability and constraints include but are not limited to:

- Aircraft not showing on radar due to slow speed or poor radar cross-section, e.g. gliders and hot air balloons;
- High performance aircraft manoeuvring in the lateral or vertical planes, and which may not be immediately evident to the controller due to radar update rates;
- The inability of the controller to detect aircraft due to the vertical or lateral limits of radar cover, or radar clutter caused by effects such as weather and interference.

2 Procedural Service

2.1 The provision of a Procedural Service does not require information derived from radar systems. Procedural Service is routinely provided to Instrument Flight Rules (IFR) flights, and on request to Visual Flight Rules (VFR) flights, by Air Traffic Control (ATC) units that are not equipped with radar, or when their radar is unavailable.

2.2 When flying in Class G airspace, pilots in receipt of a Procedural Service should be aware of the **high likelihood of encountering conflicting traffic that is unknown to ATC**. Controllers providing a Procedural Service may be able to provide some limited and generic traffic information on those aircraft in the area that they are aware of; however, due to the absence of radar data, the traffic information is unlikely to be specific. Therefore, **in response to traffic information provided by ATC, pilots may in fact gain visual contact with other traffic that is unknown to the controller**. This highlights the importance of always following an Airborne Collision Avoidance System (ACAS) Resolution Advisory (RA) when enunciated.

2.3 Recent Airprox events have indicated that some pilots operating under IFR in receipt of a Procedural Service may incorrectly believe that they have right of way over other aircraft routing through the local area. However, in the absence of a priority being communicated by ATC, operating under IFR does not confer any precedence over other aircraft that may be encountered. Therefore, **pilots in receipt of a Procedural Service must still comply with Rule 8 of the Rules of the Air Regulation 2007 (Avoiding Aerial Collisions)**. Pilots should always advise ATC whenever it is necessary to deviate from their clearance in order to comply with Rule 8.

3 Reduced Radar Services

3.1 A Traffic Service and a Deconfliction Service can only be provided by a controller using radar. Air traffic controllers generally use two types of radar, often in combination: Primary Surveillance Radar (PSR) and SSR. PSR is normally available in much of the UK and gives horizontal position information on non-transponding aircraft, subject to those aircraft being good reflectors of radio energy and to various atmospheric conditions. SSR is used for most radar service provision and relies on aircraft operating transponders, ideally with mode C selected so that level information is available.

3.2 When surveillance performance is degraded (for example due to weather clutter) controllers may still be able to offer a radar service that is reduced to reflect the shortfall in radar capability. Pilots will be advised of any such service reductions using the following Radiotelephony (RT) phraseology:

'(Aircraft identity), reduced traffic information (direction and extent) due to (reason)'.

3.3 Where PSR is temporarily unavailable (for example following a failure or during short periods of maintenance), an ATS using SSR alone may be provided. In these circumstances, controllers will limit the extent to which the service is provided and will highlight this to pilots receiving a Traffic or Deconfliction Service through the use of the following RT phraseology:

'(Aircraft identity), reduced traffic information, SSR only'.

3.4 When in receipt of a SSR only service in Class G airspace, ATC will only be aware of aircraft that are transponding. **Aircraft that are not equipped with a transponder, or the transponder has not been selected to transmit, will not be detected, and therefore ATC are unable to warn pilots of their proximity. Such aircraft would also not be able to be detected by ACAS.** This situation may arise in large volumes of Class G airspace.