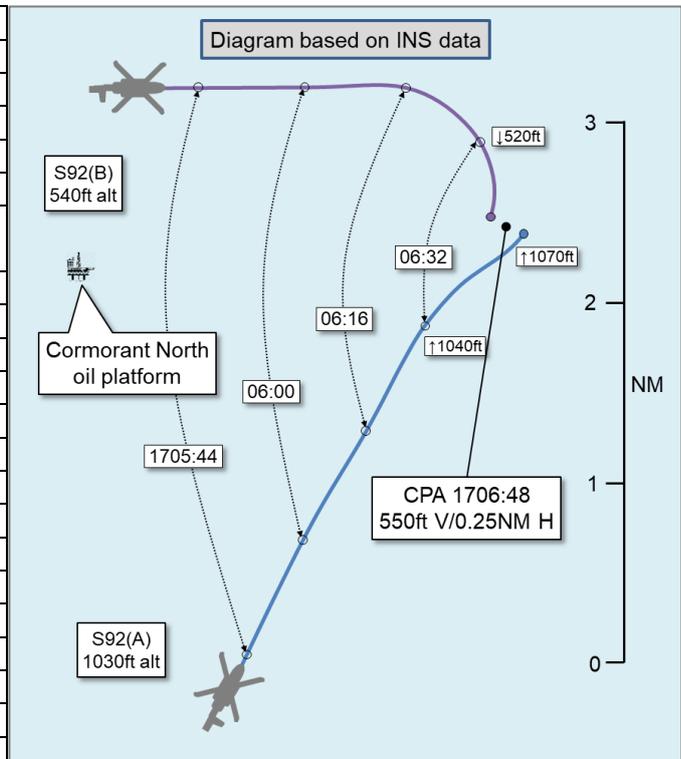


## AIRPROX REPORT No 2021006

Date: 28 Jan 2021 Time: 1707Z Position: 6116N 00114E Location: East Shetland Basin

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	S92(A)	S92(B)
Operator	Civ Comm	Civ Comm
Airspace	Scottish FIR <sup>1</sup>	Scottish FIR <sup>1</sup>
Class	G <sup>2</sup>	G <sup>2</sup>
Rules	IFR	VFR
Service	Reduced Offshore Traffic	Reduced Offshore Traffic
Provider	Brent Radar	Brent Radar
Altitude/FL	1070ft	520ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Blue/white	Blue/white/gold
Lighting	HISL, Nav, Lndg	HISL, Nav, Strobe
Conditions	VMC	VMC
Visibility	10km (night)	10km (night)
Altitude/FL	1000ft	500ft
Altimeter	QNH (1002hPa)	QNH
Heading	030°	060°
Speed	130kt	100kt
ACAS/TAS	TCAS I	TCAS I
Alert	TA	TA
Separation		
Reported	500ft V/2NM H	500ft V/2NM H
Recorded	550ft V/0.25NM H <sup>3</sup>	



**THE S92(A) PILOT** reports being en-route from the Heather platform to the Northern Producer platform at 1000ft, night VMC, 2 Cue<sup>4</sup> with their left-hand windshield heater unserviceable. The outside temperature was 0°C, with meteorological conditions conducive to possible triggered lightning. There was a full moon and good visuals throughout, although there was the possibility of encountering isolated showers. The cloud layer en-route was forecast to be SCT at 1200ft.

Brent Radar informed them that a similar type [S92(B)] was routing from the Tern platform to the North Cormorant at 500ft. The other aircraft was at a range of approximately 5NM and at 500ft. They believed that they were visual with [S92(B)] and the pilot of the other aircraft confirmed that they were visual with them; the pilot then switched on the HISLs. Brent Radar confirmed with both crews that they were happy with the 500ft separation; this was accepted by both crews. They were visual at all times with the North Cormorant platform which seemed to be approximately 2NM to the left of their track. Brent Radar informed them that [S92(B)] was 2NM away from them. This alerted them to the fact that the target they thought was [S92(B)] was actually an illusion. They then started looking for [S92(B)] which suddenly appeared in the 10 o'clock from behind a shower, turning right. It appeared to them to be at the same height. At that precise moment the TCAS 'Traffic' alert activated. They immediately turned right and

<sup>1</sup> The Airprox took place in a portion of the Polaris FIR that is ceded to the Scottish FIR (North Sea Area I).

<sup>2</sup> Although this area is defined as Class D within the Polaris FIR, the portion ceded to the Scottish FIR reverts to Class G. [UK AIP ENR2.2](#) Paragraph 1.1.1 refers.

<sup>3</sup> The data supplied by the pilots of both aircraft were incoherent with the Aberdeen radar picture. However, by adding one minute to the data points for AC2, the aircraft tracks, timings and CPA were found to be highly similar to that detected by the Aberdeen radar. It has therefore been assumed that a one minute timing error is present in the AC2 data which has been corrected to enable measurement of CPA and production of the Airprox diagram. The aircraft's operating company has confirmed that the timing is taken from the HUMS in each individual aircraft, and not referenced to UTC via GPS (or similar); therefore, a timing error between aircraft system time in the HUMS and UTC/GPS is not uncommon.

<sup>4</sup> 2 Cue refers to the autopilot modes that are engaged at the time.

climbed away from this target. [S92(B)] continued on a reciprocal course towards the North Cormorant platform, displaced to their left and below.

The pilot assessed the risk of collision as 'None'.

**THE S92(B) PILOT** reports that, while on deck at the Tern Alpha platform, they heard on the Brent Radar frequency [the S92(A) pilot] request lift from the Heather Platform direct to the Northern Producer rig at 1000ft QNH. The [S92(A) pilot] was advised that [S92(B)] would shortly be routing from the Tern Platform to the North Cormorant platform at 500ft. On lift from the Tern they were advised of [S92(A)] and they acknowledged. En-route they were again advised of [S92(A)] and stated that they were in VMC and happy with a 500ft separation. At approximately 1-2NM from the Tern they became visual with [S92(A)] and advised Brent Radar. During their right-base turn to establish on a 2NM final to the North Cormorant they received a Traffic Advisory; both crew verbally acknowledged the advisory and were still visual with [S92(A)]. They assessed that there was no threat due to the existing vertical separation and continued their approach to land.

The pilot assessed the risk of collision as 'None'.

**THE BRENT RADAR CONTROLLER** reports being advised the next day that an Airprox had been filed between 2 helicopters in the ESB [East Shetland Basin]. They were given the callsigns and the time of the incident, but the rest of their report is written from memory. They do not know how long they were on sector before the incident, nor the squawks of the 2 aircraft. They believe the aircraft involved were both S92 helicopters.

The pilot of [S92(A)] had requested to route from the Heather platform to the Northern Producer platform – a north-easterly track. They advised nothing to affect at the moment, but [a similar type] was due to lift from the Tern platform and route to the North Cormorant platform and may be a conflict but they would keep them advised. The pilot requested 1000ft for the transit. They identified [S92(A)] quickly, and gave an ROT (traffic service reduced to SSR-equipped aircraft only) service,<sup>5</sup> so accurate traffic could be passed if required. The pilot of [S92(B)] then requested lift from the Tern platform for transit to the North Cormorant platform at not above 500ft. They warned the pilot about [S92(A)] and that they would advise position as they got airborne.

The controller saw a contact believed to be [S92(B)] lift, so they passed Traffic Information to the pilot of [S92(A)] and said 'approximately 7NM to go so should land when you're about 3NM away'. [S92(B)] lifted and went a further distance west than expected before the turn to go southeast. They identified [S92(B)], gave an Offshore Traffic Service and passed Traffic Information. They then went back to the pilot of [S92(A)] and advised the traffic would be more of a conflict than first thought, advised would not be above 500ft and if required there would be nothing to affect a further climb (to give more vertical separation). Traffic Information was updated several times between the aircraft. The pilot of [S92(B)] reported visual with [S92(A)] and said happy with 500ft. The pilot of [S92(A)] later called visual as they almost overflowed the landing [S92(B)]. The pilot of [S92(A)] was then advised nothing to affect descent when ready and to report 2-way with the Northern Producer platform as communications had become poor. The pilot duly did so and was transferred offshore. S92(B) landed normally on the North Cormorant platform. At no point did the pilots seem annoyed/concerned about the other helicopter. Conditions were reasonable and at levels where there was no risk of collision, so no avoidance was given.

## Factual Background

The weather at the Cormorant Alpha oil platform was recorded as follows:

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EGRG AUTO 281650Z 27016KT 9999 BKN026/// 03/M03 Q1001
EGRG AUTO 281720Z 28018KT 9999 SCT020/// 03/M02 Q1001
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<sup>5</sup> Reduced Offshore Traffic Service.

## Analysis and Investigation

### NATS Aberdeen

[S92(A)] and [S92(B)] were both on an Offshore Traffic Service in the East Shetland Basin. The Brent controller passed Traffic Information to both as they had noted that a conflict could arise between them when the pilot of [S92(B)] requested lift from the Tern Rig to the North Cormorant. The [S92(A)] pilot was transiting on a north-easterly track at 1000ft en-route to the Northern Producer platform and was given a Reduced Offshore Traffic Service by the Brent controller. Both pilots reported visual with each other and appeared satisfied with the situation when one passed 600ft above the other. Both aircraft were at levels where there was no risk of collision. The following day, the pilot of [S92(A)] contacted the Aberdeen Watch Manager as a courtesy to advise they would be filing an Airprox. The event occurred during the hours of darkness but VMC prevailed in the East Shetland Basin, Cormorant Alpha QNH 1001hPa.

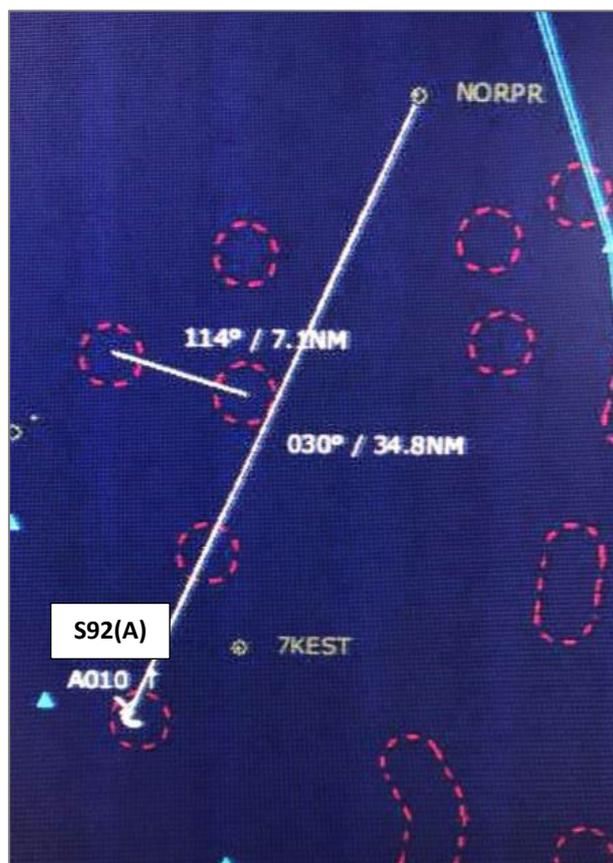


Figure 1 – 1657:00

**1657:00** – Prior to either aircraft becoming airborne, but aware of their planned routes, the Brent Radar controller (BRE) had recognised the potential for conflict between [S92(A)] and [S92(B)]. [S92(A)] would be routing from the Heather platform (HEA) to the Northern Producer (NPROD), a track of 030° and distance of 34.8NM. [S92(B)] planned to shuttle between the Tern (TEA) and the North Cormorant, (NCO), a track of 114° and distance of 7.1NM. The BRE controller used their Radar Data Processor (RDP) tools to highlight the probable tracks (Figure 1).

**1657:17** – [S92(A)] was observed to have lifted from HEA.

**1658:30** – The pilot of [S92(B)] advised BRE “we are lifting the Tern routing direct North Cormorant, 500ft with 13 souls on board, QNH1001”. BRE responded “[S92(B) c/s] roger, no known traffic to affect at the moment. [Similar type] traffic has just lifted from Heather, I think you’ll be there ahead of him, but I’ll keep you advised maybe 3 miles ahead, he’s just airborne from Heather going up to Northern Producer, so going to pass just south of the North Cormorant.” The pilot replied “All copied, listening out, Offshore Basic Service (OBS)”.

**1659:05** - BRE instructed the crew of [S92(A)] to squawk IDENT. Upon receipt of the IDENT feature, BRE informed the crew they were identified and placed them under an Offshore Traffic Service, SSR only. This was correctly read back by the pilot.

**1659:23** – BRE informed the pilot of [S92(A)] “[Similar type] traffic just lifting Tern now for the North Cormorant, about 7 miles en-route so I think should be about 3NM ahead of you when they’re landing on, I’ll keep you advised as you get closer, they’re not above 500ft so if you did want to climb any higher than your level that’s fine with me, nothing to affect”. The pilot acknowledged the Traffic Information.

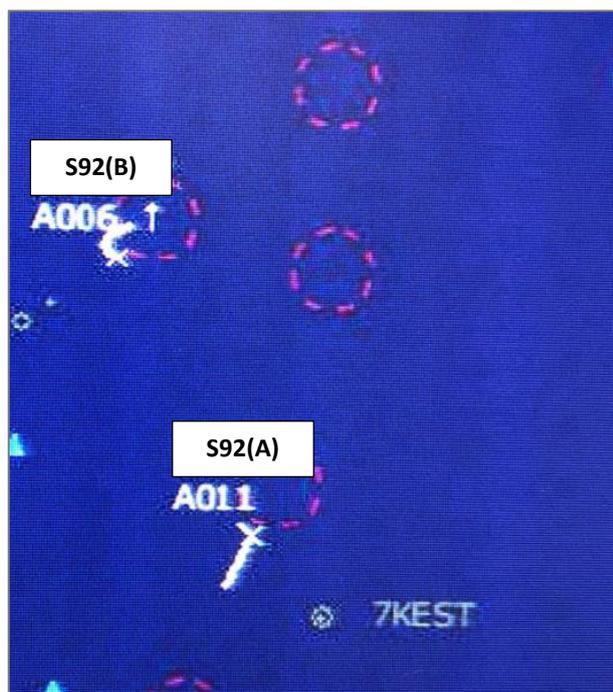


Figure 2 – 1701:10

**1701:10** – BRE instructed the crew of [S92(B)] to squawk IDENT (Figure 2). Upon receipt of the IDENT feature, BRE informed the crew they were identified and placed them under an Offshore Traffic Service, SSR only. This was correctly read back by the pilot.

**1701:28** – BRE informed the crew of [S92(B)] “[Similar type] traffic just passed overhead Cormorant Alpha at this time at 1000ft so will be 500ft above you, but closer than I thought with you going slightly to the west (of the TEA on departure), so you are going to get fairly close, but they will be 500ft above”. The pilot of [S92(B)] replied that they “are VMC so happy with 500ft separation.”

**1701:50** – BRE informed the crew of [S92(A)] “[Similar type] turning just now they’ve gone a bit further west than expected, so ten o’clock at range of 8 miles left-to-right, 500ft beneath”. The pilot responded that they were looking for the traffic.

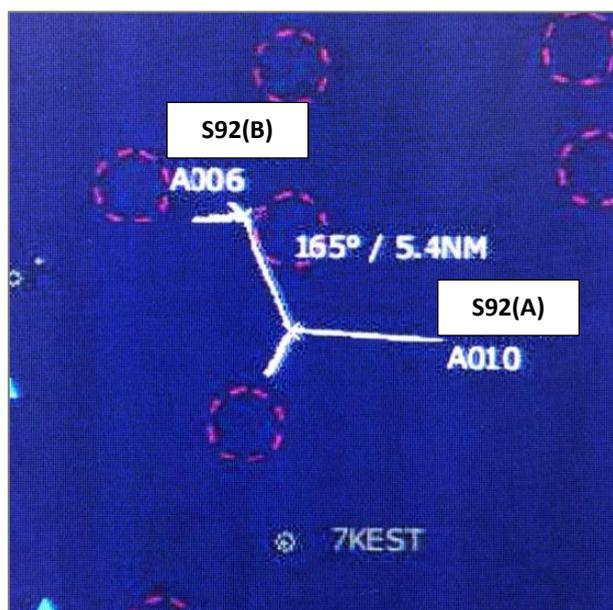


Figure 3 – 1704:02

**1704:00** – The controller moved the SSR data label of [S92(A)] to prevent it garbling with that of [S92(B)].

**1704:02** – BRE updated the pilot of [S92(A)] by transmitting “traffic now ten o’clock at 5 miles”. The RDP Bearing and Range Measurement (BRM) tool showed 5.4NM existed between them (Figure 3). This was also acknowledged by the pilot.

**1704:14** – BRE advised the crew of [S92(B)] “Traffic south of you by 5 miles, as you turn into land you will see them.” The pilot acknowledged this transmission.

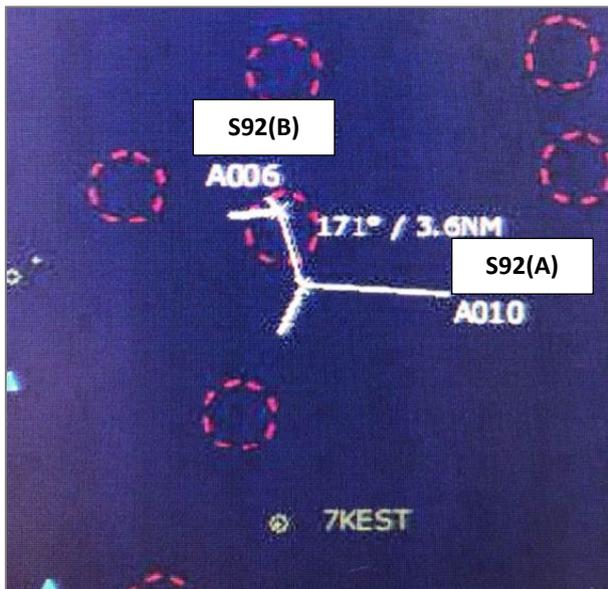


Figure 4 – 1704:41

**1704:41** – The pilot of [S92(B)] reported visual with [S92(A)]. At this time the two aircraft were 3.6NM apart with the Mode C of [S92(B)] indicating 600ft and the aircraft passing to the north of NCO to position to the east of the platform for their final approach to the deck. BRE asked the pilot to “*report landing on (the rig)*” (Figure 4).

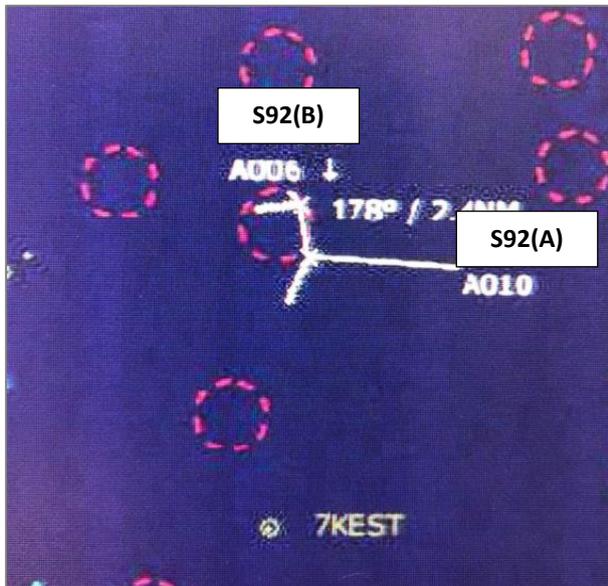


Figure 5 – 1705:14

**1705:14** – BRE updated the crew of [S92(A)] with “*Traffic at ten o'clock at just over 2 miles*”. RDP data indicated the distance was 2.4NM. The pilot of [S92(A)] reported visual with the other traffic (Figure 5).



Figure 6 - 1705:44

**1705:44** – The RDP STCA alarm activated. The BRM tool showed [S92(A)] was bearing 189° at 1.5NM from [S92(B)]. [S92(A)] appeared to climb slightly and turn right as the pilot of [S92(B)] continued their turn onto final for NCO (Figure 6).

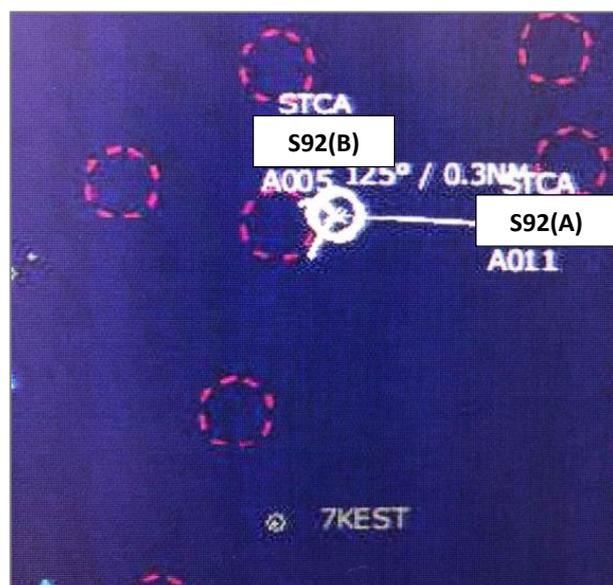


Figure 7 - 1706:08

**1706:08** – Closest point of approach – 0.3NM apart laterally with [S92(B)] Mode C indicating 500ft and [S92(A)] Mode C displaying 1100ft (Figure 7).

The Brent sector controller provides a service to North Sea Oil & Gas industry helicopters operating in the East Shetland Basin sector of the North Sea. The surveillance aspect of the service is provided by a Wide Area Multilateration (WAM) system which features Receiver Units (RUs) installed on a number of offshore oil installations. The WAM system uses SSR transponder and ADS-B data in order to present a combined surveillance picture to the Brent Radar sector controller. This service is reduced to an SSR-only service as a standard procedure due to the nature of the surveillance system.

Helicopters operating in support of the UK Oil & Gas industry receive modified versions of the standard UK Flight Information Services, as detailed in a Memorandum of Understanding between NATS and the helicopter operators. The highest level of surveillance service that can be provided

in this area is a Traffic Service/Offshore Traffic Service. The pilots of both [S92(A)] and [S92(B)] were in receipt of a Reduced Offshore Traffic Service (SSR only) at the time of this event.

CAP774 defines a Traffic Service as "a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic". BRE satisfactorily provided such information to both aircraft.

The Brent controller had correctly identified the potential for the two aircraft to be in conflict with each other at a very early stage of the event (actually prior to either aircraft being airborne). This enabled them to provide early notification to the pilots of both aircraft of the other traffic. As the scenario progressed, the controller provided regular and accurate position report updates. These calls allowed the crew of [S92(B)] to visually acquire [S92(A)] when the aircraft were 3.6NM apart and the crew of [S92(A)] to sight [S92(B)] at a range of 2.4NM.

The controller also advised the crew of [S92(A)] that if they wished to climb above the 1000ft that they were cruising at, this would be acceptable to them. The crew elected to remain at 1000ft.

The Brent sector controller was extremely proactive in identifying the potential for [S92(A)]'s and [S92(B)]'s planned tracks to bring the two aircraft into close proximity. Additionally, they advised the crew of [S92(A)] that climbing above 1000ft was an option that was available to them from an ATC perspective, but they elected to remain at 1000ft.

As the scenario progressed, the controller continued to provide accurate Traffic Information which enabled the crews of both aircraft to visually acquire each other with over 2NM still between them when both were confirmed as being visual. However, it transpired that the crew of [S92(A)] had been mistaken and, when they did sight [S92(B)], the aircraft appeared to be at the same altitude as them. They put this misperception down to an optical illusion created by [S92(B)] being in a right turn at the time.

At the closest point of approach the two aircraft were approximately 0.3NM laterally and 600ft vertically apart. Neither the Brent controller nor the pilots of both aircraft believed there was a risk of collision at any time.

## UKAB Secretariat

The S92(A) and S92(B) pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.<sup>6</sup> If the incident geometry is considered as converging then the S92(B) pilot was required to give way to the S92(A).<sup>7</sup> An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.<sup>8</sup> 'Aerodrome' means a defined area (including any buildings, installations and equipment) on land or water or on a fixed, fixed off-shore or floating structure intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.<sup>9</sup>

## Summary

An Airprox was reported when two S92 helicopters flew into proximity in the East Shetland Basin at 1707Z on Thursday 28<sup>th</sup> January 2021. The S92(A) pilot was operating under IFR in VMC at night and the S92(B) pilot was operating under VFR in VMC at night. Both pilots were in receipt of a Reduced Offshore Traffic Service from Brent Radar.

<sup>6</sup> SERA.3205 Proximity.

<sup>7</sup> SERA.3210 Right-of-way (c)(2) Converging.

<sup>8</sup> SERA.3225 Operation on and in the Vicinity of an Aerodrome.

<sup>9</sup> Regulation (EU) 2016/1185 – Article 2 Definitions, paragraph 6.

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

Information available consisted of reports from both pilots, radar photographs/video recordings, recorded FDM data, reports from the air traffic controllers involved and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments.

The Board first considered the actions of the S92(A) pilot and heard from a helicopter pilot member with experience of offshore operations that there are often supply and support surface vessels in the vicinity of offshore installations and that, in low light conditions, it can be easy to mistake the lights being shown by a surface vessel for another aircraft – particularly since the convention for colouring lights on ships is the same as that for aircraft. Members agreed that the S92(A) pilot had formed a mental model of the relative positions of the 2 helicopters that had been confirmed by what they thought they had seen and, when the TCAS alerted them to the proximity of S92(B) (**CF2**), they had been somewhat surprised by its presence. The Board also agreed with the S92(A) pilot's observation that S92(B) had probably been obscured by a localised rain shower (**CF3**), which had contributed to their inaccurate mental model of the situation. Some members wondered why the S92(A) pilot had not accepted the offer of a climb from the Aberdeen controller; the Board discussed the prevailing weather conditions and concluded that, in all likelihood, the pilot had seen that a climb would have potentially placed them into IMC and that they would have wanted to remain in VMC if at all possible. [UKAB Note: the pilot subsequently advised the UKAB Secretariat that their decision not to climb had also been influenced by their left-hand windshield heater being unserviceable.]

Turning to the actions of the S92(B) pilot, the Board quickly agreed that they had been visual with S92(A) much earlier than the S92(A) pilot had been visual with them. This had led them to feel much more comfortable with the vertical separation that had existed between the 2 aircraft and, when they also received a TCAS TA (**CF2**), they were not overly concerned as they were maintaining visual separation on S92(A).

The Board then discussed the actions of the Brent controller and agreed that they had done all that they could to alert the pilots to their likely proximity, having already identified the potential for a conflict to occur before either of the helicopters had lifted. Members considered that the controller had been proactive in offering the pilot of S92(A) a climb to further increase the vertical separation between the 2 aircraft but that, nonetheless, sufficient vertical separation had been present throughout the entire encounter. Although the controller had received a Short Term Conflict Alert (**CF1**), this had been after timely and accurate Traffic Information had been passed to the pilots of both helicopters on at least 2 occasions and both pilots had reported visual with the other aircraft (albeit the S92(A) pilot had misidentified S92(B)).

Finally, the Board considered the risk involved in this event. Members noted that both pilots had assessed the risk of collision as 'none' and, therefore, wondered why the pilot of S92(A) had reported this as an Airprox. A helicopter member commented that this could have been because the operating company's Safety Management System dictates such actions on receipt of a TCAS alert but, nevertheless, lessons could always be drawn from even the lowest risk events. The Board quickly concluded that this had been a benign encounter where there had been no risk of collision and that normal safety standards and parameters had pertained. Consequently, the Board assigned a Risk Category E to this event.

**PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK****Contributory Factors:**

2021006				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Ground Elements</b>				
<b>• Electronic Warning System Operation and Compliance</b>				
1	Technical	• STCA Warning	An event involving the triggering of a Short Term Conflict Alert (STCA) Warning	
<b>Flight Elements</b>				
<b>• Electronic Warning System Operation and Compliance</b>				
2	Contextual	• ACAS/TCAS TA	An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system traffic advisory warning triggered	
<b>• See and Avoid</b>				
3	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	One or both aircraft were obscured from the other

Degree of Risk: E

**Safety Barrier Assessment<sup>10</sup>**

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that all the recognised barriers to mid-air collision had been fully effective in this case.

<b>Airprox Barrier Assessment: 2021006</b>		Outside Controlled Airspace						
Barrier	Provision	Application	Effectiveness Barrier Weighting					
			0%	5%	10%	15%	20%	
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓					
	Manning & Equipment	✓	✓					
	Situational Awareness of the Conflicion & Action	✓	✓					
	Electronic Warning System Operation and Compliance	✓	✓					
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✓					
	Tactical Planning and Execution	✓	✓					
	Situational Awareness of the Conflicting Aircraft & Action	✓	✓					
	Electronic Warning System Operation and Compliance	✓	✓					
	See & Avoid	✓	✓					
<b>Key:</b>								
Provision	Full	Partial	None	Not Present/Not Assessable	Not Used			
Application	✓	!	✗	●	○			
Effectiveness	■	■	■	■	□			

<sup>10</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).