

MEMORANDUM TO:

Chairman, Subcommittee  
Director of Military  
Director of Air Intelligence  
Director of Scientific

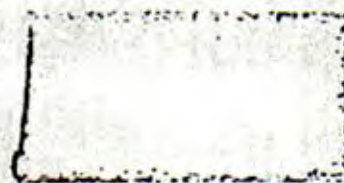
Report of Unidentified Phenomenon

Detection Observed on 30 June 1961

Canadian Naval Air Station, Dartmouth

Forwarded herewith for your information is a copy of a report on the above phenomenon, together with the results of a subsequent investigation.

2. The officer making the initial report is considered to be a sound individual and not given to hasty conclusions.



Captain, R.C.N.,  
Director of Naval Intelligence.

UNITED STATES
NAVY
DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON, D.C.



Introduction

1. On July 24th the writer visited Halifax to serve on a Board which was set up to investigate certain visual sightings and radar reports of unidentified objects in the Halifax Area. The radar detections were made between 23.00 hours and 01.00 hours of June 30 - July 1st, the night following the visual sightings. The Board was composed of:

Dr. J. Johnston, Dalhousie University, Chairman

Commander J.V. Steele, ~~RCN~~ <sup>4</sup> N.I.B.

Commander H.G. Burchell, Electrical Officer, R.C.N.

Mr. C.V. Rayment, D.R.B. (the writer)

This report covers the radar portion of the investigation only as the writer returned to Ottawa before the investigations into the visual sightings were completed.

Visits to the Dartmouth Naval Radar Unit

2. See Appendix I.

Classification cancelled / Changed to unclass

By authority of DSIS

Date 20 May 54

Signature [Signature]

Unit / Rank / Appointment D/DSIS

Summary of the Radar Evidence

3. See Appendix II.

Evaluation of the Radar Evidence

4. The radar evidence indicates that there were three separate radar detections of unidentified objects in the Halifax area on the night of June 30 - July 1st. There is however insufficient evidence to indicate that these were anything other than conventional aircraft. The following discussion is concerned with the first detection only, but the points raised apply equally well to the second and third detections.

The response from the detected object was visible on the radar scope for twelve minutes, but only one position was recorded, this being the pick-up position at 160° - 5 miles. This object was reported to have remained stationary for approximately



four minutes from the time it was first detected and then to have moved slowly out to sea to a range of ten miles. The "four minutes" was not <sup>a</sup> measured time interval, but merely an E S T I M A T E made the next day. Since time intervals are difficult to estimate in any case, the time the object actually remained in one position<sup>1</sup> may have been anywhere from one to four minutes. The last detected position of the object is also in doubt since a bearing was not recorded. When questioned regarding this bearing the operator estimated that it was approximately 140°.

The approximations involved in the recorded times and positions not only reflects on the accuracy of the available information but makes the calculation of the possible speed of the object on its seaward course unreliable and perhaps misleading.

Lt. Cdr. Doull's report<sup>2</sup> indicated that the object hovered momentarily at the ten mile position before moving in overland in approximately one minute. Since the shortest distance to the coast was at least seven miles the report gave the impression that the object was capable of very high speeds. This impression cannot be substantiated by the evidence.

Careful questioning of the operators revealed the fact that the object appeared to turn towards the coast; its response then faded and no further detections were made. The disappearance of the response was interpreted as indicating that the aircraft had moved overland in the vicinity of the station where it could not be detected.

The most probable explanation for the sudden disappearance of the response is that the aircraft entered the radar shadow which hides all low flying aircraft. This shadow is indicated on the attached chart. Since the operators were un-

1 See Appendix I

2 Appendix II-A



aware of the existence of this shadow, their assumption that the aircraft had moved quickly overland would be a natural one to make, particularly when it is remembered that they were looking for something unusual.

The misleading assumption made by the radar operators can be attributed partly to the fact that they were unfamiliar with the peculiarities of the site. P.O. Carter had been with the Unit for one month and Connally for a shorter period. Their operating experience at the Dartmouth site was therefore limited since the unit is only operational when Naval aircraft are airborne.

The two operators were on duty from dusk to dawn on the night of June 30 - July 1st. This fact alone reflects on the accuracy of the evidence. The P.P.I. Observer's position is a very exacting one and requires constant concentration. It is very doubtful whether two operators could perform this duty efficiently over such an extended period, particularly when it is remembered that a normal radar watch consists of at least 5 men whose duties are rotated at half-hour intervals.

In view of the above considerations it is evident that the radar information is not only incomplete but unreliable and therefore no conclusions can be drawn as to the identity of the detected objects.

#### Observations

The efficiency of the Radar Unit would be improved immeasurably if normal plotting records were maintained. A systematic analysis of the records of identified aircraft flying at known heights would define the boundaries of all the blind areas around the site. Once these were established they could be brought to the attention of all new operators joining the unit.

The chief lesson to be learned from the investiga-

tion is that the mere existence of a radar station or chain is no justification for complacency. To be effective a radar station must be manned by an efficient crew who are thoroughly familiar with the peculiarities of the site and the limitations of the equipment. In many cases efficiency is only achieved after months of continuous operation.

O.V. Rayment



The Radar Unit was visited from 22.00 hours to 02.00 hours on the nights of July 26-27 and July 27-28 when special watches were kept.

The radar equipment is a G.C.I./C.H.I. type which operates on a frequency of 209 megacycles. The P.P.I. (Plan position Indicator) tube is set up to present a radar map of the area having a 60 mile radius and a scale of 1" equals 10 miles. All activity within ten miles of the station is therefore displayed inside a circle having a one inch radius. This small scale makes it difficult to plot accurately the courses of short range targets such as were detected on the night of June 30 - July 1st.

It was noted that the center spot of the P.P.I. tube has a tendency to wander as the trace rotates; this has an adverse effect on the accuracy of the set, both in range and bearing.

On the night of July 27th special flights of a Harvard aircraft were arranged. The aircraft was directed to follow the reported course of the unidentified objects that were tracked on the night of June 30 - July 1st. Three trial runs were carried out at altitudes of 1,500, 1,000 and 500 feet. On each run the pilot was directed to orbit the starting point for several minutes. This manoeuvre demonstrated that, on a 60 mile P.P.I. tube, it is difficult, if not impossible, to differentiate between an orbiting aircraft and a stationary object.

The second run demonstrated the fact that a radar shadow exists to the southeast of the site. The aircraft was tracked to approximately  $140^{\circ}$  - 10 miles, at which point it entered the shadow or blind area and was not detected again until it was directed to the starting point of the third run. This shadow area is indicated on the attached sketch.

During the course of the special watches it became evident that unidentified aircraft do operate in the Halifax area.

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One transatlantic aircraft, in particular, was picked up at long range and tracked in over the coast where it altered course and followed the radio range to Moncton. At no time did this aircraft call the Dartmouth Tower or radio range station to identify itself or indicate its presence in the area. It was later identified as a T.W.A. plane when the pilot called Moncton Tower.



## Summary of the Radar Evidence

The following personnel of the Dartmouth Naval Radar Unit were interviewed by Commander H.G. Burchell, Electrical Officer, R.C.N., and the writer:

Lt. Cdr. Doull, Commanding Officer of the Unit

Lt. Mason, Air Control Officer

P.O. Carter     )  
                  ) Radar operators who were on duty on  
A.B. Connelly) the night of June 30 - July 1st.

The interviews were conducted with a view to amplifying the information contained in Lt. Cdr. Doull's report of July , a copy of which is attached as Appendix II-A. The additional information obtained is summarized below:-

1. The unidentified objects detected on the night of June 30 - July 1st followed approximately the courses indicated on the attached chart.
2. The pick-up positions were the only points for which ranges and bearings were recorded. Courses were traced on the face of the P.P.I. tube, but were erased after each track was lost.
3. Plotting records are not normally kept at the Unit because of a shortage of personnel. On the night of June 30 - July 1st, when a special watch was being kept, rough records were made. These formed the basis for Lt. Cdr. Doull's report but have since been destroyed.
4. There are many radar tracks of unidentified aircraft in the Halifax area. Most of these follow recognized air routes and are assumed to be transport planes.
5. The first object was reported to have remained stationary for "approximately four minutes". This was not a measured time interval but was estimated the next day. The "one minute" required for the object to move from a range of 10 miles to the coast was also an estimated time interval.
6. The operators were under the impression that the objects approached the coast on a bearing that would have taken them over



or near the radar site. In actual fact the objects were not tracked all the way to the coast. They appeared to turn towards the station and then the tracks faded. The objects were then assumed to have crossed the coast near the station.

7. Neither the tower personnel nor the radar operators heard or saw an aircraft after the responses were lost overland. In each case the tower personnel were alerted and asked to keep a look-out.

8. A height reading was taken on the first object when it was at a range of 10 miles. The estimated height was between 3 - 4,000 feet. No other height readings were taken.

9. The third unidentified object travelled more rapidly than the first two. It did not hover or remain stationary at any time.

10. The two operators did not agree as to the course of the third object. The indicated course is P.O. Carter's version.

A.B. Connolly was of the opinion that it turned west and crossed the coast near Chebucto Head. They were in agreement as to the course of the first two objects.

11. Carter and Connolly were on duty from dusk to dawn on the night of June 30 - July 1st. They alternated the duties of "observer" and "recorder".

12. P.O. Carter had been on the station about one month prior to the night of June 30 - July 1st. He has had considerable experience as a radar operator on naval equipment.

13. A.B. Connolly had only "operated" five or six times at the Dartmouth Unit prior to June 30th.



RECEIVED: Commander Air

FROM: The Direction Officer  
July 3, 1950.

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Unidentified Aircraft-Radar Detections

The following information is forwarded in regard to unidentified Radar Detections made on the night of June 30th.

Radar watch was set at dusk on June 30th until dawn on July 1st. (All bearings below are magnetic).

At 2315 a detection was made at 160°5 miles. The detection was stationary for approximately 4 minutes then moved slowly out to sea to a range of 10 miles and then seen to move quickly in over land and lost at 2327.

At 2328 approximately Dartmouth Tower reported that "a Chief Petty Officer in North Dartmouth reported seeing a glowing object with two lights over Imperial. One stayed stationary while the other seemed to head out to sea."

At 2335 a detection was made at 160-5. Its actions were similar to the 2315 detection and it disappeared over land at 2345.

At 0001 a detection was made at 175°4 miles. This detection moved out to sea, again turned in and was lost over land at approximately 1 minute later.

At the same time (0001) a detection was made at 053-10 miles. This detection painted twice and then faded.

No further unidentified echoes were detected during the night.

Watch was again set on the night of July 1-2 but no unidentified echoes were detected.

Signed J.R. Doull  
Lt. Commander (D) R.C.N.

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