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Unidentified Aerial Phenomena (UAP) in the UK Air Defence Region - Result of Internal Review

Following a request for an Internal Review to be conducted, which specifically asked for the decision to withhold information under exemptions s.26 and s.27 to be reviewed, some of the previously redacted sections from the UAP report have now been released.

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Chapter 1, page 1, paragraph 2

"There seems to be a campaign building up to criticise government policy about the release of information on unidentified flying objects. The authors of the campaign are firmly convinced that extra terrestrial manifestations have appeared, whereas the Air Staff are by no means certain. As it is not possible to release official data which does not exist it is difficult enough to satisfy those with preconceived ideas to the contrary". Memo 19, August 1958

CHAPTER 1

HISTORICAL STUDY BACKGROUND & AIM

INTRODUCTION

1. **Historical** Objects in the atmosphere, sometimes on the ground, but often much higher in visible space, have been reported for millennia. Reports from within UK airspace alone, number thousands since the 1950s, as shown at Figure 1.1. Clearly these reports are of something not being understood at the time by the observer. Since manned flight commenced and with the advent of outdoor laser displays, space flight, unmanned aircraft and greater public awareness, caused largely by media hype, the phenomenon of "unidentified flying objects" (UFOs) has reached heights of unprecedented public interest. In the past this has undoubtedly distorted the clarity of approach needed for a scientifically-based analysis. It has been recent MOD practice to refer to such phenomena, in the absence of rational explanation, as Unexplained Aerial Phenomena (UAP). Further, from the record, it is clear that it was MOD policy from the outset that any interest in UAP is only necessary as an assurance that any such object is not a threat to UK airspace or assets. In August 1950 a Working Party was set up (at the suggestion of Sir Henry Tizard) who thought "flying saucers should be investigated". Records show that the 11th meeting of the Joint Technical Intelligence Committee (Ref. DSI/JTIC(51) Item 8 (1951)) received the Chairman's Report of the "Flying Saucer Working Party". The Committee decided that "the document should be regarded as the final report and, in view of the conclusions the Working Party should be dissolved". The Chairman (Mr. G.L. Turney DSI3) went on to say that, "following the lead given by the Americans on this subject, the Report should have as little publicity as possible and outside circulation should be confined to one copy, for Sir Henry Tizard". The Report was approved. The Department does not possess a copy of this report (it may exist within Sir H. Tizard's papers), but it is implied that nothing important was found. Great Britain was happy to allow the US studies to answer any outstanding questions. However, there must have been further concern and the Prime Minister's request, quoted at the Preface, came the following year and the brief subsequent reply, produced a few days later, is shown here at the Historical Annex.(U)

2. The United States Air Force had started to take an official interest in 1948 (PROJECT SIGN), later changed to PROJECT GRUDGE and then to PROJECT BLUE BOOK. Such was the concern in the US that by 1952 the CIA instigated a covert study group to investigate the "10% of incredible reports from credible witnesses". In fact, over 10,000 reports, spanning 19 years, were processed by 1965 (of which it was reported that about 7% were unexplained). It was also questioned whether any use could be made of the phenomena for psychological warfare. The covertness of this investigation subsequently contributed greatly to charges of a government 'cover-up' - a notion that has continued to this day. In 1952-3 the US had set up the Robertson Panel (Intelligence Scientific Advisory Panel) and observed that British experts (Prof R.V. Jones and others) were taking the increase in UAP sightings seriously. Meanwhile, it is noted, the

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Subsidiary Recommendations

- Selection of a ten year UAP reporting period for detailed statistical studies, allowed material from both the Cold War and post-Cold War periods to be studied. **No significant differences were discovered in the results from these two time periods.** For this and other reasons it is not expected that further inputs to the database will significantly change the findings stated in this Executive Summary. Consequently, and **in keeping with the key recommendation, it is recommended that there be no further requirement for maintaining the database.**
- The flight safety aspects of the findings should be made available to the appropriate RAF Air Defence and other military and civil authorities which operate aircraft, particularly those operating fast and at low altitude.

In so advising:

- It should be stressed that, despite the recent increase in UAP events, the probability of encountering a UAP remains very low.
- No attempt should be made to out-manoeuvre a UAP during interception.
- At higher altitudes, although UAP appear to be benign to civil air-traffic, pilots should be advised not to manoeuvre, other than to place the object astern, if possible.

• The reasons affecting the variability in radar detections of UAP by UKADR (and civil air traffic) sensors, should be passed to the appropriate operating authorities. ~~XXXXXXXXXX~~ the possibility of ~~XXXXXXXXXX~~ XXXXXXXXXX ~~XXXXXXXXXX~~ XXXXXXXXXX, it is noted that the implications have already been briefed to the relevant MoD technology managers. S. 26

• The relevance of plasma and magnetic fields to UAP were an unexpected feature of the study. ~~XXXXXXXXXX~~ XXXXXXXXXX ~~XXXXXXXXXX~~ XXXXXXXXXX ~~XXXXXXXXXX~~ XXXXXXXXXX ~~XXXXXXXXXX~~ XXXXXXXXXX ~~XXXXXXXXXX~~ XXXXXXXXXX ~~XXXXXXXXXX~~ XXXXXXXXXX S. 26

• It is suggested that the findings of this report could be used to provide the public with a balanced view of UAP reports and MoD involvement. It is recommended that this report be made available in a suitable form for public release. (R)

16. **The Way Ahead.** In view of the public sensitivity on the topic (and the media vested interests in keeping the topic in the public eye), it is suggested that the technical and other relevant knowledge gained in the Department as a result of this study may be of value in any wider policy decision on the way ahead. While this can be seen as ensuring accuracy and consistency in any statement which might be made, it would also protect the DIS involvement which has, unfortunately, become public knowledge due to

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DIS SCIENTIFIC & TECHNICAL MEMORANDUM 55/2/00

Volume 2 - Introduction page 1

INFORMATION ON ASSOCIATED NATURAL AND MAN-MADE PHENOMENA

VOLUME 2

SPECIAL NOTE: Working Paper No 9 contains NATO and UK RESTRICTED information on the UK Low Flying Routes and Regulations. This information is included as an aid to the filtering and analysis of UAP reports and is NOT available to the general public (UKR) .

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DETECTION OF UAPs BY RADAR

1. The incidence of visual occurrences of UAP sightings, together with their coincidental detection on radar is extremely low. Conventional theory and radar system operation suggests that (given a radar sightline), the following conditions should occur for radar (UAP) detection to take place:

- (a) The target must be radar-reflective. (See Appendix A5)
- (b) A minimum detectable signal must return to the radar receiver to satisfy the radar receiver - S/N requirements (i.e. minimum detectable signal).
- (c) The signal must be displayed (i.e. in a modern system which uses preset thresholds the display/processing threshold must be adequate for the target being inspected).

For a target track to be formed (a), (b) and (c) must be repeated at the radar's inspection (i.e. update) rate. In modern systems supposed 'spurious' random responses are likely to be rejected/filtered and unless they fulfil 'plot' requirements, will never be declared from successive plots into 'tracks'. Hence, they will not be seen as targets.

2. There is a significant absence of radar plots/tracks on UAPs. It should be borne in mind that, statistically, it is inconceivable that all UAPs in the UKADGE are reported by direct (human) sightings). In fact, there must be many more UAPs unreported which are within radar coverage but not within human sightlines (e.g. due to cloud cover, reduction of observers in sparsely populated parts of the UK etc.). Why, therefore, are not at least even a reasonable proportion of these reported by military or civil radars, either at sea, over land or by aircraft radars?

3. **Possible Explanations** A number of explanations are possible. The conditions at

para 1 above are not being met for one or more reasons:

- a. For some reason the radar reflectivities of these unidentified objects are extremely low.
- b. Because they do not 'communicate' or appear where aircraft are expected, they are ignored by the operators (or the automatic processing systems) as spurious/short-lived observations.
- c. Those seen are taken to be caused by flocks of birds.

d. When moving fast they exceed the upper Doppler/Velocity capability of the system. This may be, firstly, beyond the Doppler measurement capability of the particular type of radar
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e. The target cannot be seen because there is no radar sightline (e.g. terrain screening/low altitude). This can only be the case on a limited number of occasions, subject to range.

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g. The object absorbs RF energy at least at the usual wavelengths in use and hence is not detected.

h. The radar rotation rate is so slow that fast objects do not remain within detectable coverage from one scan to the next so as to produce a series of plots or remain within detectable range. (For example a XRPM (XX sec) update rate would have a detection opportunity at range differences of ~XXkm on a Mach X target).

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25. The search beam (with, say, an azimuth beam-width of 1.5 Deg.) takes ~40m.seconds to pass through the UAP target. However, the velocity of the target may be 10km per second, travelling some 400 metres in this scan time. If UAP travel is across the beam and the radar detection range, due to the small target size, is only, say, 20km, (at which range the beam is only ~525m wide), the actual beam velocity is also travelling (at that range) at over 13km per second. Hence, depending which way the target is moving, either the radar beam is chasing the target and just overtakes it or, if the target is moving in the opposite direction to the beam, the dwell time on the target is seriously curtailed, as the time-on-target could easily be halved. Either way a relatively small number of pulses hit the target. With a PRF of, say 265pps about 11 pulses are designed to hit the target in normal operation against aircraft. Against a UAP, not only is it a small target in all probability, it may only receive half the number of pulses which, integrated-up, may not reach a detection level.

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Of course, this is taking a fast target as an example, with an assumed small RCS. Slower targets might be detected if their RCS and aspects were favourable.(R)

26. Operator Procedures & Thresholds XXXXXXXXXXXXXXXXXXXXXXXX

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27. Several other factors are important:

• **Horizon Geometry** The inner rings around the sites at Figure 1-1 shows the horizon range rings for targets at xx altitude, Targets further away and those at less than xx altitude will not be seen. XXXXXXXXXXXXXXXXXXXXXXXX [These areas may or may not be those where visual witnesses happen to be present at the time].

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• **Correlation** XXXXXXXXXXXXXXXXXXXXXXXX Frequently, when a UAP is spotted from an aircraft (often civil air-traffic) it cannot be seen on the controlling CAA radar. There is only one UK event on the DIS record where 3 radar's (2 RAF and one CAA) had simultaneous contact with a UAP, which eventually faded and disappeared.

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