

## CHAPTER 4

### POTENTIAL RELATED MILITARY TECHNOLOGY

1. As a necessary adjunct to UAP database construction a large number of scientific papers were researched for any relevant information on atmospheric natural phenomena because of the distinct possibility of this being misinterpreted or misrepresented as UAPs. It was envisaged that, as the phenomenon can cause radar alarms and visual distraction that a deeper knowledge of the effect might reveal a possible military application that a hostile power, given the ability to reproduce the same effects might exploit, possibly as some sort of decoy or countermeasure. At the same time the possibility of man-made objects causing UAP events necessitated a brief survey (at Working Papers Nos 9, 14, 15 and 17) of the clearly possible mis-reporting of aircraft (black programmes or otherwise), satellites, balloons etc. The possibility of air-objects within earth's atmosphere with characteristics beyond or at the limits of the current technological capability of any of earth's aerospace industry having already been considered briefly at Chapter 2 and at Working Paper 6. A brief examination of whether the phenomenon could be replicated and whether or not any other nation was attempting to exploit the same or derivatives of the phenomena is reported at Volume 3.

### DEDUCTIONS FROM WIDER RESEARCH

2. **Physical Observations & Human Factors.** Evidence, (measurements taken during Canadian medical investigation of False Memory Syndrome using modulated magnetic fields), has shown that creativity and the capacity to generate vivid images are correlated both with suggestibility and indices of elevated temporal lobe sensitivity. This human response has been briefly examined in the context of unusual human reactions when exposed at close ranges to UAP. It has been further discovered that if incidental/peripheral information is pre-absorbed, however sub-consciously, then this is heightened by unexpected additional influences. It is of importance therefore to note (and detailed at Working Paper No.25), that 20th Century apprehensions are to the fore. Hence, contemporary illusions of satanic cults, aliens, spacecraft, beam weapons, extra terrestrial 'examinations' and 'abductions' and the like; have replaced the old anxieties of fairy tales, spiritual abductions, ghosts, 'old hags', invasion by the Spanish or (in the USA in particular) by the Communists! It seems likely that the locations of tribal ceremonial sites (e.g. Stone Circles) were knowingly placed to enable humans to interact with 'earthlights' (See Working Paper No.10), so as to enhance mystical experiences. Later when satanic and other forms of rite were practised, Churches supplanted the old structures on these sites. Hence, many are currently located on 'Ley Lines', earth fault lines, (Working Paper No.10), which still produce earthlights, most probably due to seismic activity from time to time. Earthlights are illuminations produced at the point of earth movements.

3. The attraction of Earthlight sites in the first place was the medieval propensity to use them as indicators of buried minerals, such as iron, gold, zirconium and copper. However, there are no measurements of fields available to investigate possible correlation and to discover whether these are the same type of field(s) which cause the human experiences listed at Working Paper No 25. Earthlight energy is not currently fully understood. Further, it is not understood why some are seen on radar and others not unless they are comprised of some type of variable (electron) density plasma.

4. Timing is important in the responses of the human brain to these events. In particular, at night time (e.g. 0400hrs) certain individuals' cyclo-rhythmic profiles are heightened, for example, their right hand side brain intrusions. These enhancements are also associated with transients above normal activity in both left and right brain hemispheres. The enhancement of the left being especially associated with

intense linguistic processing, connected with creativity and inspiration, where enhanced profound understanding of self and surroundings prevails.

#### TERRESTRIAL & AIRBORNE BUOYANT CHARGED BODIES

5. If it is assumed that at least some UAPs are buoyant electrically charged bodies, comprising aerosol particles, gas clouds, and plasmas, then intuitively one would expect that any changes in the electrical environment would modify the movement of the charged body. The internal charge equilibrium and hence vertical and horizontal position of the body is dependent upon the ambient earth/atmospheric electrical charge, in which the body is immersed. Sources of local electrical and magnetic field energy for the charged body appear to be:

- Electrical charges, caused by particle friction due to wind, weather, and turbulence.
- The addition of extra chargeable particles, due to dust clouds, emissions from industry, power stations, jet aircraft exhausts and volcanic or earthquake activity.
- Charged atmospheric conditions, caused by electrical storms.
- EM energy from very high power radio/radar transmitters.
- Electrical fields surrounding open power distribution lines, rail electrification lines, transformers, sub-stations, etc.
- Charges on moving bodies due to their motion in the earth's magnetic and electrical fields.

6. The spread of energy levels is considerable. Some of the fields, though relatively weak, are known, for example, to attract ball lightning - which can dart towards what is presumably sensed as an attractive opposite charge. It is believed that the combination of buoyancy, due to the prevailing temperature and pressure conditions and the earth's local electrical and magnetic field conditions at the time are primarily responsible for the presence, positioning, velocity, direction of motion and altitude of the plasma-type UAP. The presence of an aircraft (with its own accompanying electrical and magnetic fields), together with its electromagnetic field emanating from radios, radars, altimeters, etc., must also be a potential source of attraction, repulsion or modification of other fields (or of the total vector-summed fields) present in the location. This must have the potential to influence any charges bodies which happen to be present nearby in an equilibrium-charged condition, and hence susceptible to external fields.

7. The key question is whether the balance of charges, which might be expected to keep a UAP (of the charged mass type) otherwise continuing at the same speed and height will be diverted by another charged body (either airborne or on the ground) and at what range this attractive or repulsive force might act. It must, however, be remembered that electrical forces are not the only ones present. If there is a body temperature differential, heated gas buoyancy forces will also be acting on the body and, if there is forward motion, aerodynamic forces. One can therefore postulate a charged mass which reaches some equilibrium, where both buoyancy and earth's local (surface and atmospheric) electrical charges control

altitude, while a combination of wind and horizontal electrical charges control motion in the horizontal plane.

8. If more than one such body is present at the same time (as is often reported), then presumably additional interactive forces come into play which may or may not keep them in close proximity to each other. Similarly it is suggested that charged bodies which come within close distances of aircraft may either do so coincidentally or as a result of the changing electrical potential in the atmosphere as an aircraft passes through. Researches in this area show that the US Scientific Advisory Panel (1953) was probably close to the truth when it commented that the 'Foo Fighters' (acknowledged to be 'balls of fire' when they came close to aircraft, both in Europe and the Far East during WW2) were believed to be 'electromagnetic phenomena - unexplained but apparently not dangerous'.

9. **'Foo Fighters'** It is logical to question both why few aircrew reports of 'foo fighters' are currently received - and of the currently reported phenomena to question whether these are the same or not. There are a number of reasons which may be postulated for reduced numbers of 'foo fighter' reports, compared to the World War 2 period:

- During WW2 very large numbers of relatively slow military aircraft were flying for long sorties at an altitude of up to ~20,000ft. The majority of aircraft today, (except light aircraft, helicopters and FGA types on low flying) rapidly climb to economic flight levels. Hence, there are now fewer aircraft flying in the region where UAPs are most likely to be seen.
- It is believed that the majority of plasma formations will be short-lived, reducing observation opportunities, unless the aircrew happen to be in the right place at the right time.
- During WW 2, all large military aircraft, used many more 'Mk1 Eyeballs', than currently is the case, to view as much of the sky as possible. This was essential to avoid collision, for navigation and to spot attacking aircraft. Look-out was kept from the tail, the astrodome and by the Waist Gunners - all with opportunities for spotting any rearward following objects.

10. If it is postulated that the 'foo fighters' are the same as UAP, with mainly neutral buoyancy, they probably move towards a set of attractive electrical forces at constant altitude. It can be further suggested that a formation of large aircraft (as in World War 2) would have presented an even greater electrical attraction force, for any oppositely-charged mass. If the foregoing postulations are correct, then the inevitable conclusion is that today one should expect to find that:

- The highest proportion of airborne encounters will be between the ground and ~15,000ft.
- UAP reports could be expected to be concentrated where mainly ascending and descending aircraft are present (e.g near busy airfields, air-traffic zones, holding patterns and air corridors).

11. It is important to note that while it is not suggested that aircraft are the cause of UAPs, the presence of aircraft may encourage the presence of a UAP, once formed, as it seems that the aircraft position and velocity can influence UAP activity. It is noted that there is an electrical current flow in an airframe due to the Earth's magnetic field. This is dependent upon the aircraft size and its velocity.

Further, with its much less streamlined shape and rougher surfaces, there were many opportunities for friction-induced electrostatic energy to build up on older aircraft. It is suggested that if the 'foo fighters' were due to charged buoyant bodies, then they may have had more of an attraction to the WW2 aircraft than present aircraft. It is also possible that the charged combustion particles from these older aircraft, using petroleum rather than kerosene, caused some further differences in charge and, finally, that there may have been a significant influence of overall charge in the atmosphere when huge formations of aircraft were flown.

12. It should be noted that the foregoing, in the mind of the reader, be it ball lightning, charged aerosol, gas plasmas etc., will undoubtedly be imagined as a wholly visible event which can also be seen by observers from the ground or from an aircraft, despite the fact that this is most probably happening invisibly for much of the time. It only becomes a UAP when it can be seen! We have always assumed that there is no collision threat to aircraft if nothing which appears solid can be seen in the way ahead!

13. A plasma is the fourth state of matter, comprising charged particles, electrons and ions. Plasmas in a magnetic field form a particular anisotropic media in which various electromagnetic and electrostatic waves can propagate. The electron plasma frequency can be determined from the electron plasma density. An ion plasma density also exists, which, because of the ion mass, is at a much higher frequency than the electron plasma frequency. It is often forgotten that the magnetosphere of the earth comprises low density plasmas and weak magnetic fields. While interest in radiation phenomena in plasmas has become a topic of interest in space communications (e.g. to and from spacecraft), in the UAP context the interest is in ionised plasmas which become visible. It can be shown, in anisotropic plasma wavefronts, that cylindrical and cone-types can be produced from point oscillating sources, in addition to standard spherical and spheroidal wavefronts. This may be relevant to some reported UAP events.

14. **Proximity to Strategic Assets** It has been suggested (even claimed in some quarters) that 'UFOs' are 'spying' on strategic installations, such as power stations, airfields and nuclear facilities. There is no evidence whatsoever from the statistical analysis made to substantiate this claim. Several points are considered significant in this respect. For example, events of the 'close encounter' category (which can cause human effects) occur less often in city or in urban areas. It is believed this is due to the large number of electrical discharge paths which cause the UAP to dissipate quickly when near to dense population areas. Further, as they are not as visible because of the ambient light, they are less likely to be approached. In rural terrain (especially in mountains and hills) and open country in general there are fewer discharge paths via buildings. This is likely to cause charged bodies to be attracted to the few attractive areas where electrical activity, gases and particles in suspension and dusts (e.g. from plant, power generation stations, power sub-stations and pylons) are located. They are similarly attracted towards isolated structures, and moving isolated vehicles, overhead rail electric lines and telephone lines.

15. **Nuclear Radiation** It has been claimed in some circles that residual traces of nuclear radiation, above normal background levels have been measured, where a 'UFO' has reportedly 'landed'. There is no UK evidence to support this. However, it has been reported by UK (Culham) researchers, that there may have been slight radiation rises at the earth's surface (above natural levels) following **lightning**. Two conclusions can be drawn:

- The fact that there is no UK 'post-landing' evidence is because no timely measurements have ever been made.
- Follow-up measurements (no measurements are known to MOD), for example, taken by other organisations, may well be due to a lightning/plasma cause, not fully understood.

16. **Sound & Smell.** Comments are made in Volume 2 on the probable reasons for lack of sounds on well over 95% of the reported UAP events. It is further noted that when sounds are reported (excluding those from unfamiliar but misreported aircraft) they are personal perceptions and would probably have been reported quite differently **had they not been accompanied by a visual stimulus - and sometimes by a temporal lobe stimulus.** Thus, plasma/ball lightning phenomena (even spherical) can quickly turn into a 'saucer with a dome above and beneath' Such an entity is 'expected' to hum or whine (and increasingly so on 'take off'). It is pointed out that electrical phenomena in air (Working Paper No 1) in the form of arcs, discharges and fields, often hum and crackle and that the electrical activity (in the presence of nitrogen), causes obnoxious odours. It is well-known that electrostatic fields cause hair to bristle (in addition to any fear factor in the scenario the observer believes he or she is seeing).

#### UAP PLASMAS

17. The most important facts, discovered as a result of the supporting research at Volume 2, are that several types of charged mass can exist in the atmosphere and ionosphere. These are:

- EARTHLIGHTS
  - CHARGED AEROSOLS
  - BALL (& BEAD OR GLOBE) LIGHTNING
  - IONOSPHERIC PLASMAS
  - FIREBALLS (Possibly a variation of ball or 'globe' lightning)
- All are sufficiently rare in their visible forms to be categorised as 'UFOs' by the average witness. **It is postulated that plasmas are the result of incompletely burnt-up meteors, which do not reach the earth as meteorites and which are probably responsible for the hitherto unidentified phenomena which cannot be attributed to other known causes.**
  - BALL LIGHTNING & EARTHLIGHTS appear to radiate both visual wavelengths and (probably) electromagnetic waves, or/and fields of an unknown nature.
  - It is postulated that the plasma formations formed from some meteors also emit, not only visual and IR wavelengths, but some form of probable modulated magnetic field or fields.
  - Calculations (from generic UAP body sizes as a radiating aperture) appear to confirm that these radiations have been experienced/encountered by many witnesses. They have always been within

what is known, in the theory of electromagnetic waves, as the 'Near Field'. Some, but not all have suffered adverse medical effects, while others have apparently experienced temporary biological changes described as 'lost time', 'abduction' and even 'medical examination', invariably accompanied by descriptions of 'alien' entities. Despite the vivid recollections no non-human physical evidence ever remains after the event. For example, no magnetic after effects are traceable on vehicles, despite their engines reportedly stopping or their radios becoming inoperable. This inevitably points to the temporary presence of a non-permanent magnetising influence (i.e. **not** a direct current magnetising force); in other words a fluctuating/alternating field.

- Plasma-type events sometimes cause lights in the sky. Further, it is possible to influence charged masses by the application of external energy. [Ufologists call this effect a Close Encounter of the 5th kind (see paragraph 17)]. An irradiation of a 'UFO', using external energy (e.g. a laser beam), can apparently cause some 'lights' to change form. There is also a scenario where radar energy can cause a non-visible, but highly charged gas plasma to cross a charge threshold and become 'triggered' and thus become visible. (Working Paper No 24). It is easy to see how the uninitiated interpret this as a 'response' from the 'craft' or it's supposed 'occupants'.
  
- Only on the rare occasions when lights are seen at very close range (probably within 10-20m outdoors or within the same room indoors) do reports change from purely visual events to reports of exceptional experiences and descriptions. It is therefore deduced that if an observer is exposed (in the open) to a 'close encounter' (much closer than the Ufologist's CE1), then they are likely to come within the influence of a field (or fields). It seems likely that in particular, if, as described (at Working Papers No.1 & 25) a 'hot spot' from the charged mass irradiates the witness (often described as a beam of light), then extra-ordinary descriptions follow. There seems to be strong evidence (from the Canadian medical measurements) that at least one component of the field is magnetic in nature and modulated, causing excitation of the brain's temporal lobes. It also seems significant that when similar objects are approached when in a road vehicle or aircraft, the more extreme experiences are not reported.
  
- 'Hotspots' within the plasma bodies can occur. These reportedly have different colours than the rest of the mass and presumably have different internal temperatures. If they suddenly appear, they are often reported as hatches opening, or lights at portholes or beams.

18. **Proof of Medical Effects** The medical evidence is persuasive (Working Paper No 25) but it does not prove conclusively that magnetic fields **exactly** of the same type used in the Canadian experiments [1] emanate from UAPs and are always the cause of some of the more bizarre reports (e.g. alien abductions, creatures, etc.); since there are no known actual field measurements taken in the presence of any UAP, certainly in the UK and probably there are none taken elsewhere in the world. Neither does it conclusively prove that all UAPs emit **only** magnetic fields - there may be others, including even fields of which there is little current knowledge. Nevertheless, one important finding is that people are not equally susceptible to the magnetic syndrome induced in the experiments. This probably explains why reports are occasionally received of close encounters but without the more bizarre effects.

#### AIRCRAFT ACCIDENTS

19. Based on the postulation that the sudden appearance of a UAP immediately ahead of an aircraft might cause an accident, the investigation (reported in detail at Volume 3) concentrated on filtering a

large number of military aircraft accidents, which occurred over a thirty year period, where there were no survivors and where the cause was not absolutely determined. Expert air accident advice and access to records was provided by IFS, RAF Bentley Priory.

20. In the majority of cases accident records could show that technical reasons - albeit unknown or impossible to confirm - were the cause. However, a small number of unexplained accidents remained, almost always while flying at high speed and low altitude. These were re-examined in some detail and the UAP database was interrogated in a search for the tenuous connection of reported UAP sightings in the immediate accident vicinity; or of unusually high numbers of UAP reports in UKADGE on the same day and in the same time bracket.

21. For about half the accidents identified (pre 1976) the UAP records no longer exist in DI55 - correlation studies could not be made. For the remaining (very few) accidents, no firm UAP event correlations could be established, although the correct atmospheric and electrical conditions must have existed for the formation of UAP on those particular days, as UAP reports were received. **While this neither confirms or denies the cause of the accidents, the sudden and startling presence of a UAP cannot be totally ruled out.** The probability of this occurring seems to be very low - certainly much lower than the probability of a bird strike. However, it should be noted that while even a large bird would not necessarily be seen by the crew (and hence no evasive action taken), the reported visual size of many UAPs is much larger than an aircraft and would almost certainly cause a major control input because of the surprise factor if a UAP ahead was not spotted until it was very close.

22. There are several other factors to consider:

- Why, if there is a finite probability of a low altitude 'head-on encounter', have there not been at least some instances where a UAP has appeared and the aircraft and it's crew survived? Where are these air-miss/near-miss/close proximity reports?
- As there is no reason, in theory, for the scenario to apply only to low-flying aircraft, it could be argued that aircraft flying at higher altitudes might have, by now, encountered and evaded what seemed to be an imminent collision? The only records are airprox reports, where it was too late to manoeuvre but no damage was caused.
- On the assumption that at least some of the UAP phenomenon is caused by plasmas developed from diving meteors, at worst, statistically, could not an aircraft flying at high altitude have suffered damage or even destruction and gone unrecognised as such?

23. Although a few unexplained 'near-misses' have occurred (see below), there is no evidence of any deliberate or hostile activity, harassment of aircraft in the UKADR, repeated or closing, buzzing, or evidence of a near miss causing airflow disruption. There is no reported evidence of passenger or crew alarm or physical effects on passengers or crews. No reports have been received of any adverse effects which can be attributed to UAP fields on aircraft systems, radios, radars, controls or instruments. It is interesting that no reports have been received of UAP **overtaking an aircraft in flight**, although this has been reported by passengers and drivers in road vehicles. All reports concerning aircraft seem to be of UAP crossing an aircraft's track or approaching, 'keeping station' abeam or of 'following'. As reported below, the time for evasion of approaching UAP is minimal. Reported elsewhere in this report are rare incidents where plasmas (ball lightning) have entered airline cabins. Although there are no reports held





SECRET  
UK RESTRICTED  
UK EYES ONLY  
UNCLASSIFIED

## CHAPTER 5

### SUMMARY OF STUDY FINDINGS

#### INTRODUCTION

1. This investigation has depended upon the available reports submitted by a widely representative portion of the population over at least 30 years. Some have been trained observers and others have been members of the general public who have responsibly reported a phenomenon which is unfamiliar and even frightening. In many reports the information required is incomplete. Only by statistical analysis is it possible to extract major attributes and form a credible view as to the value to Defence Intelligence. In so doing, the application of several diverse scientific fields have been necessary.

2. A new database was constructed and populated with as many items as possible in the timescale of the study, to enable a number of basic investigations to take place. This amounted to ten years of data, entered from the UAP reports. The Department is aware that, quite apart from the very high media and public interest in the topic, serious 'UFO' research organisations and other Governments have made efforts to identify the UAP enigma. No UAP reports from other nations are available to the Department, other than occasional open-press information and all results have been obtained independently by a scientific analysis of all aspects of the available information. It is recognised that some of the information 'released' by other nations may be deliberate debunking or disinformation. This public information has been ignored and, in fact, was deliberately not read-into until conclusions had been reached using purely the data held in the department and appropriate scientific papers and sources.

#### FINDINGS

3. **Items of Interest to Defence Intelligence** As a result of the studies and considering all the available information, no evidence either of intelligent control of the objects, alleged 'inspections of UK strategic assets' or any hostility or threat has been found. Although there are some allied topics of potential military interest there are no findings in the category of direct interest to defence intelligence.

4. **Unexpected Encounters by Aircraft** Based on the available evidence it is concluded that although unidentified objects regularly appear in the UKADR there is no hostile threat from them to our aircraft, they do not belong to another nation and there is no evidence of extra-terrestrial activity apart from the very high probability, in some cases, of their connection with meteors.

5. There is a marginal possibility of danger to RAF aircraft flying low and fast due to the potential for distraction and sudden avoidance manoeuvres but not from collision risk. Following the Russian experiences, it would be prudent to avoid trying to 'chase' UAPs and it does not seem to be necessary to take violent evasive action if they are encountered head-on by any aircraft, including civil aircraft.(see Volume 3)

UNCLASSIFIED  
UK EYES ONLY  
UK RESTRICTED  
SECRET



changing climatic conditions and UAP reports are somehow connected. This, it is suggested is almost certainly enhanced by the corresponding increase in meteor activity.

12. No further investigations were made to determine whether there is correlation between certain combinations of atmospheric conditions and UAP events. One of the considerable difficulties of such an investigation - which is beyond the scope of the TORs of the study (quite apart from cost and effort which would be involved), is the key factor that a UAP might be formed in one place where conditions are conducive to its formation, but remain unseen until it has travelled to another location where, for the time being, it is sustained by its own and other ambient attributes, moved around by extant external influences, but no longer in an environment in which it would have originally been formed. This motion clearly affects UAP (plasma) life and shape.

13. **Human Medical Aspects** No attempt was made to consider further the physiological and psychological aspects which impinge on the topic of UAP, when 'close encounters', including the 'abductee' and 'contactee' scenarios allegedly occur. Such events are relatively few in the UK, none have included measurements and the department has no knowledge of any follow-up medical investigations which may have taken place. They do not impact on the findings. It is clear, however, that such events only happen (such as can cause physical injury or equipment interference on occasions) when a human is quite close to the phenomenon. In this respect, the most important finding is the potential connection between the modulated magnetic fields, used in the Canadian medical experiments which seem to produce the same effect on the human mind as those experienced by those few witnesses who have been very close to a UAP.

14. **Dependence on Culture** No attempt was made to consider further 'cultural tracking' - other than to note that in the late 19th and early 20th centuries (well before the time of this Department's Reports!) UFOs were reported as 'Airships' - complete with propellers and cupolas. [As an independent check it is particularly important to note that the examples given at Annex C (Czech examples years 1607 to 1985) have exactly the same basic descriptions as those reported today]. The first 'saucer' description was erroneously given this name by a journalist in the USA in 1947: ever since, witnesses expect to see this shape. The presence of domes, portholes and landing gear, inevitably in the form of tripod legs and the like, soon followed!

## STUDY RECOMMENDATIONS

### Key Recommendation

15. Although the study cannot offer **certainty** of explanation of all UAP phenomena, the existing evidence is sufficiently persuasive to make **one** key and **five** subsidiary recommendations:

- It should no longer be a requirement for DI55 to monitor UAP reports as they do not demonstrably provide information useful to Defence Intelligence.



**SECRET**  
**UNCLASSIFIED**  
UK RESTRICTED  
UK EYES ONLY

circumstances beyond our control. Above all there will, most likely, be a need to respond to the inappropriate statement that the MoD has not carried out any UAP investigations, which was issued in a written reply, by another Department.(R)

**UNCLASSIFIED**  
5  
UK EYES ONLY  
UK RESTRICTED  
**SECRET**