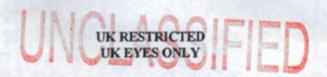


### CHAPER - 4 UAP WORK IN OTHER COUNTRIES

#### FORMER SOVIET UNION

- It is clear that the Former Soviet Union has taken the study of UAPs seriously and that this may well be related to a programme of understanding and exploiting certain UAP-related natural phenomena, such as plasmas. A 'UFO' Commission was created under the USSR Union of Scientific and Engineering Societies in 1989; together in 1990 with an Inter-Industry Ufology Research Centre (SOYUZUFOSENTR) to co-ordinate records. This Centre had the rights of an Institute under the USSR Academy of Sciences, and was headed by V.G. AZAHAZHA (or AZHAZHA) an eminent researcher and former naval submariner. A school was set up with the Terms of Reference to study "ufology as a science of unidentified flying objects and their inter-relations with the universe and, in particular, with the biotechnosphere of the earth". The ten week course, reportedly studied, observation, characteristics, astronomy and psychophysical aspects of the problem. The russians use the acronym UFO in all their references, course names etc., and this is used here rather than UAP, while discussing their work(U)
- V.V. ALEXANDROV and Y.N. GLAZOV, respectively Senior Project Engineer and Astronaut (Hero of Soviet Union) both of the Test Centre (Tsenatr Podgotovki Kosmonatov) at the Scientific Production Association (Geophysics), have been involved in research into UFO activity in 'abnormal zones' and landing places(!). A laboratory to support this work is reportedly located at AKHTUBISK (on the Volga). was Deputy Head of the Cosmonaut Training Centre in charge of science and testing.(U)
- Plasma Research. Annex A summarises two russian scientific papers where, it appears, 20-30
- Former Soviet Union Ufology Commission The Commission Head, Azhazha, was also a member of the USSR Union of Scientific and Engineering Societies Ufology Commission. The geographical features of zones in which UAP reports have been particularly frequent have been studied. Russian open reports attribute UFO activity as being 'purely terrestrial in origin', according to some theories. The Institute have reportedly developed light filters, instrumentation, IR and UV photography to pursue the topic. Unexplained imagery has reportedly been obtained including "peculiar spheres, humanoid figures (perceived as cylinders, circular objects and man-like beings in visible light). If the imagery exists, it has never been published. It seems more likely that Some theories, Azhazha reported, attribute these to images may have been seen but not recorded. "manifestations of some substance whose nature is little known at present. This substance may be capable of forming organic matter and temporarily becoming visible to the unaided eye". [COMMENT: The reader is referred to the unusual effects on humans apparently caused when in proximity to some aerial phenomena,
- Near Field Effects In 1991 a group of Russian Researchers, having collected soil samples from an alleged UFO landing place noted an unusual field (NFI). V. KHZOPOV (a member of an Applied Biolocation Group), reported that other samples were obtained from other reported landing sites. In all cases a local field developed over a period of three hours. Impairment of human senses were reportedly observed in every person studied who had been 'in the field'. The main effect was that the thought processes were degraded in some way, but that 'energy was also added'. The report published in 1991 states that the energetics of the upper human





energy centres increased. [Comment: In the absence of further information It can only be assumed that this may apply to brain or nerve centre activity. There is no indication as to the type of field involved. It is possible, and confirmed from some other data that russian scientists may have discovered some new field types. If this is the case the reports suggest that they have also developed a means of both detecting and measuring the field. See also Volume 2 Working Papers No. 1 and, again, paper No. 25, in particular]. The implication here is that the Russians are stating that UAP emanate some type of field - presumably of a nature known to man since apparently they were able to sense that a 'field' was present.(U)

- 6. In an interview with 'Pravda Ukrainy (24 April 1990), the Deputy Flight Director of the Centre for Control of Space Complexes, stated that UFO sightings in nuclear test and disaster areas were to be studied. One pilot possibly involved is (or was) Boris KOLOTOV. [Comment: It is of interest that both former nuclear test areas and disaster areas (presumably natural events, for example, earthquake, hurricane/tornado, etc.) are locations where an additional level of atmospherically-borne dust is likely to occur see the Working Paper at Volume 2 on Charged Aerosols]. In 1990 the All Union Ufology Association was formed and headed by Major General of Aviation P. POPOVICH (Pilot Cosmonaut) at the Air Force Academy.(R)
- 7. Also in 1990 General of Aviation Igor MALTSEV, Chief of the Main Staff of Defence Forces, submitted documents and photographs for public release. These reports were from pilot and other expert observers. [Report held by DI55(R)]. Another Russian personality involved in the studies is Vsevolod TROITSKY (Russian Academy of Sciences) who chaired the Commission for the Study of Anomalous Propagation and Phenomena.(U)
- 8. Former Soviet Union Aircraft Incidents Sokolov reported. "We had 40 cases where pilots encountered UFOs. Initially they were commanded to chase, then shoot. When our pilots would engage the UFO it would speed-up, our aircraft would give chase, loose control and crash. That happened 3 times and twice the pilots died. After that the pilots we told to observe and change course and get out". "The pilots viewed UFOs as a definite threat". Sokolov says "the military were interested in UFOs including the belief that if the secrets of the UFO could be described they would be able to win the competition against prospective enemies by incorporating the technology". The incidence of 'Foo Fighters' or 'BOLS' (i.e. BOLIDES) is perhaps higher than reported. In Russia, airline crews, it has been suggested, are reluctant to call passenger's attention to these as it is bad for business! (U)

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### OTHER NATIONAL ACTIVITY

- 10. CHINA In the early 1990s China announced an interest in Unexplained Aerial Phenomena, and in May 1993 set up a 'Scientific Institute for the Study of UFOs. This Institute numbers more than 300 cooperating specialist members over 24 Industrial and Municipal Departments centred on Peking/Beijing and other large cities. The TORs are to determine whether UFOs represent unusual or unconventional astronomical phenomenon. Some articles have appeared in the Chinese News Media (in UKHAMI), together with UFO photography. The Chinese had contact with Russian officials on the topic of UAP in the setting-up of the organisation described briefly above, specifically Academicians Frolov, Kasmacheev and Pitrovich.[1][(U)
- 11. SPAIN The Spanish MoD have taken the 'UFO' phenomenon seriously. Sixty six files have reportedly been released to the public. DI 55 Staff have not seen these files.(U)
- 13. The medical experiments which unexpectedly replicated 'UFO' effects on humans took place at the University of Ontario, Canada. No papers have been seen which directly relate these to an intention to replicate UFO effects obtained in Ontario, (U)

[1] Comment: Source is translation of barely readable text on a document visible during a video interview





## ANNEX A

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ANNEX A

### GENERATION OF PLASMA FORMATIONS

### INTRODUCTION

- 1. Avramenko [1] was working on plasma formations during the Cold War as a source of high power radiation, especially to produce 'long-lived' plasma formations. The properties developed were high density, low optical emission and retention of shape in an airflow up to 200ms'. These were supposedly analogues of ball lightning but were clearly part of the Soviet Union HP microwave weapon programme. The colour of the plasma was light blue in air. In a water acrosol a near spherical shape was formed. Avramenko also showed, under laboratory conditions, that Energetic Plasma Formations (EPF) could pass through obstacles with holes in them. For example holes in rods, spheres, disks or plates. The EPF can pass through a much smaller hole than its dimensions, reforming on the other side without dividing into parts. This suggests that the plasma contains forces similar to surface tension or mutual attraction of the particles forming the medium. Experiments proved that pressures were possible up to ~25 torr before break-up. Strangely, the time taken for completion of the motion through the aperture apparently depends not only on the hole diameter and length (e.g. when passing through a tube), but also on the material. For example when the length of a glass tube was lengthened by a factor of ten, the transmit time was reduced by 40%. In diamagnetic material the time was reduced by ~25%. (U)
- 3. Signature Control Experiments [2], have also been made into the 'cloaking' application of selective plasmas by modifying the plasma ionisation (i.e. it's density), so as either not to reflect the incident RF, or only partially to do so, and hence to prevent or reduce the probability of target detection. In diamagnetic material the time was reduced by ~25%. The propagation of these plasmas in a transverse magnetic (H=1.2 x 10<sup>6</sup>A.m<sup>-1</sup>) or electric (E=10<sup>6</sup>V.m<sup>-1</sup>) fields was <u>not</u> accompanied by a noticeable deflection of the plasma in the experimental channel.(U)
- 4. In the experimental cases the energy distribution within the plasma was found to be axisymmetric and with rapid fall-off at the skirts. This may not, of course, be the case in the UAP context, where further variation may occur in single-core plasmas and complex plasma densities, and other probable E or H field distributions, may exist in multiple-cored formations (see colour imagery in front of Volume 1). Hence, the fields/fluxes from EPF's can be expected to be distributed not only as heat flux (of the order ~5 x 10<sup>4</sup>W.cm<sup>-2</sup> where the core temperature can be 20,000 to 30,000<sup>6</sup>K) but as visible and IR radiation. (R)
- 5. It is noted, and again especially relevant in the UAP context, that the overall plasma body density can be close to that of the surrounding air, even though the density of the charged particles themselves is high, as is the energy density. The particles exhibit an intensive mutual attraction, hence



the plasma mass is capable of autonomous existence for an anomalously long time; when compared with an ideal plasma. The charged particle density for 100° EPF may be of the order 5 x 10<sup>16</sup> cm<sup>-3</sup>. The references indicate that at least 20-30 Russian scientists have been pursuing plasma research, its relevance to military activities, including ball lightning, and plasma research relative to air vehicles.(R)

- 6. In summary, the plasma density is such that, if formed (by whatever means) in the atmosphere, it is likely to:
  - 'Float' or 'bob' (because of its close relative density to the surrounding air).
  - Climb or descend slowly, unless acted upon by very strong external, potential differences seen in the 'darting' towards objects of different potential often electrical or other earthed pylons, or their insulated or isolated conductors; or towards vehicles in open ground, especially on exposed high moorland or, for example, on mountain roads.
  - Exhibit erratic motion caused by an interaction of total body charge with other surrounding magnetic and electrical fields.
  - Be attracted towards areas where the electrical activity in the form of electrostatic charges may be modified by the presence of intense air-vehicle activity.

(U)

#### SPHERICAL FORMATIONS IN THE ATMOSPHERE

- 7. A 1995 Russian review states that spherical formations in the atmosphere originate mostly as a result of human activities. Examples of activities which can produce spherical shapes are:
  - Launches of missiles, spacecraft and satellites.
  - The burning up of used missile stages and defunct satellites in dense layers of the atmosphere.
  - Atmospheric pollution (see also Working Paper 1 & 2 on Dusty Plasmas).
  - The launching of stratostats and balloons (see Working Papers No.14 & 15)
- 8. Other spherical formations may be related to meteors, planets, the Aurora Borealis or other optical and natural weather phenoma, also covered in Volume 2. Many drifting luminous formations maintain their shape over long periods. Explanations have been sought, which include, chemical, optical and vortice models which often do not explain the reported electrical properties of the formations. In contrast, the plasma models appear not to explain their stability and lifetime. At least one option[3] contends that such formations, including ball lightning, consist of electrostatically bipolar charged shells comprising orderly orientated water molecules.(U)
- 9. While ball lightning diameters (see Working Paper No.2) are predominantly small, by comparison with many others reported, the common factors between all these are that they exhibit:





- Sudden appearance/emergence.
- Sudden disappearance.
- Erratic and other motion which enables them to be clearly distinguished from familiar objects.
- Forms of energy detectable electrical field(s) present, magnetic field(s) present, heat, light, colours and sound.
- Similar shapes or shapes and, in general, those formed by rotations or distortions of a sphere.
- Shapes described as patterns by that bounded by several 'marker lights' (or colours) - (e.g. rings of lights, triangles, oblongs).
- Shapes described as solid objects but often with lights (colours) at their sharp extremities, (is at their 'corners').
- A propensity for spherical formations to form near sources of Methane, Iron and copper.

  (U)

10. About 60% of ball lightning phenomena have a diameter of ~5m, with a probability of occurrence of 10° to 10° km² min¹. In basic terms this is approximately 100 to 1000 incidents on earth every hour, many of which go unseen and therefore unreported. Apart from any visual sightings, the implication must be that these do not constantly present false alarms to radars. While the theoretical radar cross-section of the ideal reflective sphere, (given by 2 ½a/°ð, where 'a' is the radius), can be 50 square metres for a 5m diameter ball and ten for a 1m diameter ball, at D(L) Band; clearly this is not the case in practice. Plasma researchers quote diameters from centimetres to 10-15metres and RCS values from -60dB to 8 metres at the same RF. (U)

- 11. During the period of observation the phenomena may exhibit one or more of the following:
  - Gradual growth.
  - Splitting into two or more separate parts (but rarely more than five), accompanied sometimes by a change of pattern, spacing and shape.
  - Dissolution/dissipation to invisibility (often instability reported as accelerating away rapidly; when in fact the diameter reduces and intensity fades).
  - Merging of disparate 'bright lights' (or colours) into larger formation (often reported as small craft joining the 'mother ship' and thereafter forming a row of portholes!).



- Disappearance, accompanied by smell.
- Rotation, non linear motion.
- Weak thermal radiation.
- Translucence, haloes, blackness.
- Beamed light emissions, especially when near a conductive object (usually described by witnesses as beams, which, if they move or rotate become 'scanning searchlights', or 'beams searching for a landing site', especially if the formation is stationary at the time. It is, of course, inevitable that conductive objects will be found depending on the location. A vehicle, for example, crossing moorland, may be the only conductive object for miles apart from a few telephone or power wires). They are, most likely, the discharge or leakage paths by which the plasma entity gradually loses its structure and weakens to a point of disappearance unless it is either attracted away or its buoancy state changes, allowing it to 'float off' and seek another destination.
- Under some conditions invisibility to the human eye, while being visible to some forms of photography and contrarily, visible to the eye, but not seen on photographs taken at the time.
- or White ball lightning (generally smaller in diameter) is usually spherical, hence the name; larger formations with other shapes are often reported as discoids, and have often three or four different colours, especially at the top or bottom.

(U)

12 Proposed Theory It is noted that the Russian perception is much the same as in The West. That there is a UAP connection is evident by the 'beamed light emissions' and 'landing site' mentioned above. In a strong electric (E) field, a stable structure can be formed of water molecules, where their dipole moment vectors are aligned with the force lines. This is possible because they possess polarity and hydrogen bands are capable of forming dense structures like ice or loose ones like snow. Among all known substances, water possesses the largest number of crystalline phases; which can be formed under various temperatures, pressures and water vapour condensation conditions. Certain types of ice, which originate at high pressure, can exist at temperatures exceeding 70°C. Only common ice is lighter than water. Due to ordered structures and high electric striction pressure, spherical formation balls can exist at high temperatures. Using the theory suggested [at Ref. 3], the shell stability and shell strength is determined by the local field, which keeps the shell of the spheroid in tension. The shell theory suggests that for such spherical formations, for example for a radius of ~10km, the delay period could be ~200s. When such shells disintegrate, molecules change state and stored energy is suddenly released, for example as a small explosion. The attractive force between a sphere and a conductive surface at distance  $\ell$ , when the axis of the sphere is normal to the surface is given by:

 $F = 3p^2/32\pi\ell^4$  at  $p = 4\pi ER^3$ 



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At  $R_2 = 10m$  (where  $R_2$  is the sphere outer radius)

 $E_1 = 3MV.m^{-1}$   $\ell = 42m$  F = 123Nor at  $\ell = 10m$  F = 40kN

The magnitude of this attraction force, plus their low aerodynamic drag could explain how plasma balls have been seen to move against the wind.

(U)

- 13. Corona Discharge The corona discharge from the surface of objects can ensure the stability of low density objects in the air. When the charged formation approaches a conducting object, the discharge of a bi-polarly charged shell would increase. This is normally accompanied by an electric wind which, in laboratory conditions can be shown to exceed 2m.s<sup>-1</sup>. The reactive effect produced by the electric wind is capable of balancing the mirror reflection and gravitation forces. (U)
- 14. Shells Spherical formations are shells that may be perceived differently by the eye, cameras, or radar. These shells cause an interference of light and radio waves. Ambient light falling on a thin shell will be partly reflected by the inner and partly by the outer surface. If the shell thickness happens to displace a light source by half a wavelength the waves would interfere, thus making the shell appear as a black (or solid) object or silhouette. (U)
- 15. Supercooled water vapour in the discharge space can enhance the amount of glow by up to 1000 times. In the UAP context, eyewitnesses frequently report convergent radiating star-shaped beams. (U)

#### SUMMARY

[1] "Study of Plasma Formations in an Erosion Discharge" Avramenko R. F., Bakhtin B.I. et al Sov. Tech Phys 35 (12) Dec 1990

- [2] Kang W.I., Radar M & Alexoff. I "A Conceptual Study of Stealth Plasma Antenna" Plasma Science Laboratory, University of Tennessee
- [3] A.I Mesenyashin "Spherical Formations in the Atmosphere as a Physical Phenomenon" Journal of Electrostatics No. 36,1995. Russian interest in UAPs is often evident in this short review, where 'shapes as solid objects' and triangles etc are mentioned. The similarlity of UAP characteristics are not normally connected in Western scientific papers on ball or bead lightning.



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