

Technical Commission 3AF- SIGMA2



**Work progress summary
2015**



Summary progress SIGMA 2

Mandate

SIGMA 2 commission has been mandated in 2013 to conduct technical and scientific investigation on UAP cases and adopted the following approach

1. Undertake desk research and the creation of a database for investigation of data and documents whose authenticity has been established and quality assessed.
2. Build a scientific and technical network with first, building links with recognized institutions in the field of UAPs, starting with CNES-GEIPAN¹.
3. Establish a selection of case studies from available databases to conduct technical investigations.
4. Initiate a reflection on the physical manifestations of these phenomena and their links with the physical sciences.
5. Establish an inventory of the means and techniques of observation and, starting from a physical analysis, make recommendations on the improvement of observation techniques.

Methodology for a documentation and database

A census of the databases has been established as well as a document assessment methodology relating to cases of UAPs but also to research in this area, particularly in the USA, Great Britain and in Eastern Europe countries.

Researches has also been carried out on official documents tracing contacts on the UAP subject at the UN in the late 60's, and then in 1978 with the decision 33/426 for international cooperation and data sharing, that have never been materialized. This decision was actually neutralized and turned into an incentive to nations to conduct their own research and to inform the General Secretary of the collected data.

The publication of archives previously classified by many countries in the course of the 2000s might answer this incentive.

A methodology has been established to provide a systematic classification with an assessment of the reference documents used in our work. A computerized documentary basis for its transfer to 3AF was drafted. It is being enriched not only from the GEIPAN archives but also from some official document databases available.

¹ The Group for Study and Information on Unidentified Aerospace Phenomena of the *Centre National d'Etudes Spatiales* (National Centre for Spatial Studies)



Contacts and Communication

Many contacts have been established to, firstly, collect data on UAP's cases and, secondly, to build a scientific and technical network.

These contacts have been primarily made with CNES / GEIPAN, with which a cooperation started since late 2013 to deepen unexplained cases (cases D category), and to investigate new cases. The complementarity of roles between CNES / GEIPAN – French official in charge of the UAPs – and SIGMA2 – technical commission of 3AF – has been clarified.

Furthermore, SIGMA2 took further contacts in France, particularly with the French Air Force (CDAOA²), which led to a visit at the CNOA Air Operation and Cosmos Centres³ in Lyon Mont Verdun French Air Force base in July 2015. It allowed to a better understanding of the missions and resources of CNOA and to discuss the principles of cooperation with GEIPAN. These steps will be refined in the future as UAP's cases arise. Furthermore preliminary contacts were made with the Service Historique de la Défense (SHD), as part of a joint approach with the GEIPAN concerning research on defence archives before GEIPAN foundation.

In terms of means of observations, SIGMA2 recently contacted the IMCCE (Institute of Celestial Mechanics and Ephemeris Calculation of the Paris Observatory). The IMCCE is in charge of the deployment of FRIPON⁴ network (over hundred dedicated cameras networked with HF receivers) and interesting SIGMA2 and GEIPAN as an additional means for observing UAPs to complement the conventional Air Traffic Control (ATC) and Air Defence capabilities. Initiatives will be taken for data gathering from scientific networks.

Concerning abroad contacts, a technical cooperation agreement has been concluded with the Chilean CEFAA⁵ in 2013, followed by a meeting in Paris in late 2014 and then with the American NARCAP⁶ support in 2015. These two organisations, respectively official and associative, bring together technical capabilities and conduct scientific studies of UAP cases. SIGMA2 has been also contacted by another American scientist group : the SCU (Scientific Coalition for UFO) for a case study.

Presentations were made via the 3AF's Letter in 2014 (3) and in 2015 (a text on the methodology is provided in the letter of January 2016). SIGMA2 has been invited to participate to the CAIPAN Workshop organized by CNES-GEIPAN in July 2014, what have given the opportunity to introduce its methodological approach. After the success of the CAIPAN Workshop, we consider in our turn to organize a workshop on UAP's physical and their observation, in the near future. Various international organizations have already expressed their interest in such a scientific meeting, heartened also by the CEFAA and the NARCAP. GEIPAN has proposed a joint communication with SIGMA2 on the occasion of a conference organized in Bulgaria in November 2015 about extra-terrestrial life.

² Air Defence and Air Operations Command

³ Center dedicated to Space Operations for the CDAOA (Command for Air Defence and Air Operations)

⁴ Fireball Recovery and InterPlanetary Observation Network

⁵ Studies of Anomalous Aerial Phenomena Committee (*Comité de Estudios de Fenómenos Aéreos Anómalos*)

⁶ National Aviation Reporting Center on Anomalous Phenomena



Case Selection

The SIGMA 2 approach has set up a number of criteria for D case research based on physical data combined with reliable observations of UAPs and not explained. Cases were selected from the GEIPAN database but also from the British Ministry of Defence records published from 2008, and from US archives. Contact has been made directly with organizations witness of UAPs such as Air Traffic Control in Jersey whose testimonies and radar data were collected for analysis. SIGMA2 has also been contacted in 2015 to study the data from a UAP case occurred near Puerto Rico Airport in 2013. Cases with such physical records are not yet numerous; however SIGMA2 resources are mainly focused on these cases. One of the difficulties encountered by SIGMA2, besides the access to physical data, is the ability to restore and operate the computer data to conduct a thorough analysis.

Physical elements

Works on the physical elements were firstly to establish an inventory of physical observations, meaning the physical manifestations of the phenomena including radar observations, electromagnetic (interference), optical, acoustic, magnetic, gravitational but also ... on living organisms.

Particularly, an analysis has been conducted to try to establish a profile of "observable" to characterize the UAPs and to seek, where possible, a correlation between different observations. This approach is being implemented on identified cases.

Similarly, a synthesis has been carried out by a physician member of the Commission to establish a parallel between some identified UAP cases and knowledge about the effects of ionizing radiation on living beings. Inventory includes, for example, effects on tissues, heart rate and memory, depending the types and levels of radiation.

We have also started an inventory of natural phenomena that could explain some UAPs, such as plasma phenomena (linked to observations at Hessdalen, ball lightning or globular, the UAP British Ministry of Defence study reports) but re-entry (meteors, inflows of artificial objects) or weather phenomena, like lenticular clouds.

Meanwhile, a standard physical theories census has been conducted as well as an inventory of theories on atypical propulsion that are sometimes cited for the kinematic and electromagnetic behavior of UAPs that may be of artificial origin, including magneto-hydrodynamic, electro-gravitation ...



A special study has been carried out on the possible link between the theory of electromagnetism and of General Relativity, that link could result to imagine a local control gravity. Indeed, such a theory, if it were proven, could explain some cases of observation where the gravitational field could have been modified and induce an observed unusual kinematics that seems to defy the laws of known physics (inertia, aerodynamics). To date, no conclusion can be drawn, apart from the fact that some UAP's observation are difficult to explain by known natural phenomena. They may be related to artificial devices whose behaviours doesn't belongs to known technologies, even in the case of confidential military device program, unless we assume that they are part of a highly advanced physics, unknown, which would very surprising. These artificial UAPs could use unknown propulsion technologies, perhaps using a nuclear power source capable of developing great powers and very high electromagnetic fields. But this is only a hypothesis to explain physical behaviours that do not respect any laws of known physics or conventional propulsion technologies.

Observation

We conducted an inventory of aeronautical observation means, civilian and military, that monitor air traffic but also space. Conventional monitoring means offer excellent performance but have limitations inheriting to observation missions of vehicles evolving from very low altitude to high altitude (i.e approximately 100,000ft), except specialized means such as tracking radars or space surveillance; but these are designed for satellites observation that follow Keplerian orbits.

At low altitude, the increase in air traffic, the emergence of objects like mini drones also make it difficult to observe the UAP among many objects flying at low altitude and low speed. In addition, average civilian radars are increasingly means operating on the principle of secondary radars to track cooperative objects with a radar transponder.

Observation of UAPs is not a taboo for the French Air Force, which has procedures to identify cases and provide the data to GEIPAN, when saved. But the data retention time is limited in time, which requires responsiveness on the part of investigators and possibly an optimization of the feedback loop. The Air Force is open to provide data but many missions to complete and case UAPs observed are almost non-existent, so non-priority with respect to numerous air operations daily.

However, additional technologies such as passive radars, but also the observation of meteors networks, as the already mentioned FRIPON network – which implements optical cameras and HF passive receivers networks – suggests that new cases could be identified and recorded, this time with exploitable physical data.



Conclusion & outlook

The work of the SIGMA 2 Commission is in progress. Many contacts have been forged. Documents of interest have been identified, including abroad, but cases with recorded indisputable physical evidence is scarce.

However, as explained above, new technologies and means of observation unfold gradually and are hoping a new data gathering. If unexplained cases with physical data are already identified, no explanation has yet been given by SIGMA2, apart from the census certain physical theories, which are also demonstrated. Far from demonstrating the inconsistency of identified cases, it argues for a deepening of the studies, an intensification of the data collection, provided that have an organization able to store and analyze such data, without which pretending conduct serious case analysis with scientific process is delusive and fruitless.

The implementation of means and skills in data processing is being analyzed and remains one of the key points for building documentary database, but also the exploitation of technical data collected on cases. Similarly, it is necessary to involve physicists to compare the analyzed data and physical assumptions.

The organization of an international scientific workshop is highly desirable. It would allow an exchange of views between a limited number of scientists on serious cases with physical data, to have their interpretation and observational technics. It could allow the construction of a real scientific network and arouse the interest of some physicists on published data and those to come.

Two ongoing initiatives on associated topics deserve to be mentioned: the Breakthrough Initiative launched by Stephen Hawking with Yuri Milner (billionaire Russian scientist, multimedia domain) that propose US\$100 million to stimulate and reward any discoveries about life in space from underutilized radio telescope data. Moreover, Massimo Teodorani, astrophysicist who is interested in UAPs, contributes to the UFODATA initiative to build a multi-sensors station in order to collect data on UAPS and build an international database. The initiative is based on "crowd funding".