

ERNAGE 1989: The Facts and their Analysis

A. AMOND, W. DE BROUWER, P. FERRY and A. MEESEN

Abstract. A remarkable UAP (Unidentified Aerial Phenomenon) has been observed by LtCol André Amond and his wife on December 11, 1989 at Ernage near Gembloux in Belgium. We provide first-hand data about all phases of this event and describe the behavior of the observed lights. They belonged to an invisible object that was flying very slowly at low altitude, without making any noise. It surprised the witnesses by approaching, turning at close range and departing at high velocity. During the new inquiry, we found a related observation, also made in Ernage. The facts are analyzed in a rational way and the hypothesis that it could have been a helicopter or some other conventional aircraft is carefully checked, but refuted. This raises challenging questions.

Introduction

The events that are described and discussed in this text occurred in the central part of Belgium, during the evening of *Monday December 11, 1989*. This was less than two weeks after the beginning of the “Belgian wave”. An exceptionally great number of Unidentified Aerial Phenomena had been observed, indeed, during the evening of *Wednesday November 29, 1989*, near the Belgian-German frontier. Only a few of these observations were immediately known and reported by journalists, but 145 observations of this type were progressively collected for this single evening. Since it has sometimes been claimed that later observations were simply triggered by the first reports, assumed to result from perceptual errors or hallucinations, it is worthwhile to mention that *André AMOND and his wife* made their observation without knowing anything about the first media accounts. They had not even read a book or any text about UFOs or similar phenomena. They were thus very surprised by what they saw. On *Thursday December 14*, the two national television stations (RTBF and RTL) tried to present an overview of the strange events. The witnesses saw the second emission and realized only then that other persons did also observe something alike.

1. The authors of this study

The first author is the principal witness, who happens to be a high ranking Staff officer of the Belgian Army. **Colonel André AMOND** (AA) is civil engineer and *Breveté d’État Major*. He has also acquired a degree in applied natural sciences. In 1989, he was in charge of management and planning of the infrastructure resources of the Ground Force. After much hesitation and consultation of some colleagues, he wrote an account of his observation for the Ministry of National Defence (figure1).

FORCES ARMÉES
ETAT-MAJOR GENERAL
ETAT-MAJOR DE LA FORCE TERRESTRE
SECTION PLANS ET PROGRAMMES
SOUS-SECTION INFRASTRUCTURE
(Corps de l'organisation et adresse)

Le 19.12.1989
No. 1011111111
Annexes: 12 min.

TRANSMIS
à SOBEPS
à l'attention de
pour

TF: 02/2433027 Ext: ...

Général,
Veuillez trouver en annexe le rapport que
j'ai établi suite à mes observations du 11 Dec 89.
Ce rapport a été transmis au GCBPM et à VS3 Ctl.

Copie pour :

Signature: André Amond
NOM: Amond
Grade: Lt Col
Fonction: GSP Inf

Figure 1: LtCol André Amond sent a letter to the Belgian Ministry of National Defence and a copy to VS3Ctl and SOBEPS.

The function of VS3Ctl, responsible for air traffic control at the Head Quarter of the Belgian Air Force, was occupied by Major LAMBRECHTS. The same day, the colonel did also send a copy to SOBEPS. This “Society for the Study of Space Phenomena” had been founded in 1971. Its aim has always been the “*rational and objective study of space phenomena and related problems, as well as the unprejudiced diffusion of collected data*”. It started immediately after the first media reports of unusual events in 1989 to collect first-hand accounts and to check the trustworthiness of the witnesses. It became then progressively clear that a “wave” of exceptional magnitude had come over Belgium. Similar observations were made in adjacent countries, but they were not so numerous and SOBEPS was not in charge of their collection. During the following days and months, observations of UAPs continued to be made at a lower rate, but with transitory increases. This happened in particular during the evening of *December 11*. The collection of as much reliable data as possible was a great challenge for SOBEPS, functioning only with voluntary collaborators, but the essential results were summarized in two books¹ that will be called VOB1 and VOB2.

The second author is **Major General Wilfried DE BROUWER** (WDB). In 1989, he was LtCol and he is now retired, but between 1989 and 1991, he was “*Chief Operations of the Belgian Air Staff*”. He was thus in charge of any kind of military air traffic over Belgium, as well as the security and control of its airspace, exactly at the time where so many observations of Unidentified Aerial Phenomena were made there. In 2007, he has been asked by the National Press Club, Washington DC, to report about the Belgian wave². It should be mentioned that he is himself an experienced pilot. His insights and technical competence are thus very important for the present study.

Patrick FERRY (PF) was a founding member of SOBEPS. Because of his professional expertise in photography, he was in charge of the examination of all photos and videos of UAPs that SOBEPS got. This resulted in contributions to VOB1 and VOB2. He also wrote articles for *Inforespace*, the regular publication of SOBEPS and for *Kadath*, a magazine that he co-directs and that is dedicated to an objective study of past civilizations. He is leading a society for videoconferences, documentaries and video formation, but remains an active researcher. When SOBEPS ended all its activities in 2007, he created COBEPS (Comité Belge d’Étude des Phénomènes Spatiaux), which continues to collect data on UAP observations made in Belgium, but publishes only through electronic channels³.

Auguste MEESSEN (AM) is professor emeritus of the Faculty of Science of the Catholic University of Louvain. As a physicist, he was teaching quantum mechanics, theoretical physics and solid state physics. Being particularly interested in basic unsolved problems, he developed a theory of *Space-Time Quantization* that generalizes relativity and quantum mechanics. It accounts for all possible elementary particles. In 1971, he got interested in the scientific and technical aspects of UAPs and became a member of SOBEPS. Occasionally, for important cases, he made investigations, but his main objective is to *understand the propulsion system* of unconventional flying objects of unidentified origin, often observed throughout the world and documented in the course of human history.

2. Sources of information

The observations of AA have been documented already in several complementary ways. These accounts will be used and completed in this study.

- As we mentioned already, Colonel André AMOND described himself what he and his wife had observed and he sent this text *on December 19, 1989* to his superior level: the Ministry of National Defense. SOBEPS was allowed to publish the full text and the accompanying figure in VOB1 (p.90-92). A translation of this **letter** is provided in appendix 1.

- The colonel and his wife were interviewed *on January 3, 1990* by a SOBEPS investigator. His **report** was written on January 9, 1990. It contained important first-hand information, but also some personal interpretations. This applies in particular to the “probable trajectory” that he drew on a copied map of the observation site. This drawing was reproduced at a smaller scale in VOB1 (p.92, figure 2.21), with a reinforcement of the hypothetical trajectory. One of the purposes of the present investigation was to check the validity of this data. We provide a translation of essential contents of this report, published in VOB1 (appendix 2). The colonel and his wife did also separately fill out the standard SOBEPS questionnaire.
- AA has been interviewed for *several TV programs*. The RTBF produced in 1992 an emission that presented various opinions⁴, but included also an account of the observations made in Ernage, with a corresponding **computer simulation**⁵. ARTE realized in 1996 a much more complete document, where AA appeared as a witness⁶. In November 2007, the RTBF showed a document that had the form of an investigation⁷. The colonel was interviewed on the observation site and the whole process was documented on video by PF. The previously realized computer simulation was shown again in 1996 and 2007.
- A **new investigation** started on August 23, 2008 at the observation site. Both witnesses were independently interviewed by AM, but WDB was also present and asked questions concerning the behavior of the UAP, while PF record the whole interview on video. This investigation was actively pursued during several months through electronic and direct contacts, as well as further field investigations and the collection of additional data. We discovered and interviewed even **another witness** who made related observations in Ernage.

3. Motivation and objectives

When a discussion concerning the Belgian observations started during the spring of 2008 on EuroUfoNet⁸, we had at first to answer some questions about the observations that were made near EUPEN on November 29, 1989. AM, who had conducted these investigations, was obliged to discard erroneous claims, but the discussion focused then on the case of ERNAGE. This part was summarized by Wim van UTRECHT⁹ (WvU), who believes - like other *so-called skeptics* - that the Belgian wave of UAP observations did only result from misperceptions of conventional aircraft, with additional psychosocial effects. This thesis has been advocated in particular by Renaud LECLET¹⁰ (RL), who claims or suggests with great insistence that Colonel AMOND and most other witnesses of UAP observations during the Belgian wave, simply saw **helicopters**. RL and his collaborators - who amended and expanded the document after his death - don’t prove their statements, but blame SOBEPS for not having proven the contrary. This was implicitly done, but now we will do it in an explicit way. It is noteworthy that we got only access to LECLET’s document on October 26, 2008.

It would be unnecessarily tedious to discuss this paper in detail. It accumulates a lot of speculative assumptions, but indirectly, it raises a basic question: *Are the observed UAPs real signs of something that calls for specific scientific attention or are they simply illusions?* We will answer this question by considering three cases, mentioned by RL and his collaborators.

The *first* observation they presented did occur at PLANCENOIT (and not Maransart), on October 4, 1992. It will be presented and discussed in the last chapter. It is very instructive, indeed, to shed light on the methodology that has been applied to give the impression that the “helicopter hypothesis” could be adequate. Everyone can then compare their and our methodology.

The *second* case of the published text¹⁰ concerns the observations made at ERNAGE on December 11, 1989. Actually, it was the first one in RL’s original document, claiming that “*more than proba-*

bly”, which means with certainty, the witnesses simply saw “*the SA-330 Puma (helicopter) of the BAF (Belgian Air Force)*”. The central subject of this article will be a thorough reinvestigation of this case, to verify if this is true or not. We will complete and eventually correct what was known until now, but this provides also an opportunity for every one of us to learn more about UAP observations.

The *last* case, treated in RL’s paper, concerns the observations of the gendarmes Hubert von MONTIGNY and Heinrich NICOLL near EUPEN on November 29, 1989. These observations were investigated and described by AM¹¹ and the result of a very extensive complementary investigation is available on Internet¹². It contains the literal transcription of an extensive interview of the gendarmes and the account of a long lasting discussion with Belgian skeptics. They claimed that during the last part of their observations, the gendarmes simply saw *Venus*, but this planet did not appear and stay where the gendarmes saw the UAP during about one hour. Moreover, it is not possible to explain the observed effects by means of natural atmospheric processes. Actually, it is sufficient to look at figure 1 of this article¹², to become aware of the basic problem: LECLET’s proposition that the gendarmes must have seen a *helicopter* results from *not respecting the observed facts*.

By means of an amalgam of secondary, rumor like and sometimes false stories, RL and his collaborators finally get to the intricate conclusion that “it is possible that the object [observed during the last phase] is *the helicopter* seen in the first sighting phase or another of the same type (...) *like the Puma, the Super Frelon and the Sikorsky Black Hawk*” (p.12). You can choose, since he and his collaborators consider that they don’t have to prove anything. One of the many witnesses who observed this flying object described it as massive and powerful. Thus, it is proposed that it could also be a “*CH-35 Super stallion*” (p.14). The color slide of a UAP, which was taken at PETIT-RECHAIN in April 1990, was subjected to intense scrutiny¹³. It shows an object that has the same shape and disposition of lights as the triangular platform that the gendarmes saw near EUPEN, but this fact was not mentioned.

The objective of this study is to reinvestigate in a careful and objective way the observations that were made at *Ernage*, on December 11, 1989. First, we present the facts (chapter I). Then, we proceed to a rigorous analysis of all the available data (chapter II). We also verify if it is really possible to explain these facts in terms of a *Puma helicopter* - as suggested by Leclet - or some other conventional aircraft (chapter III). We add some considerations about resulting scientific problems (chapter IV). They concern a special feature of the Ernage case, the methodology used by the so-called skeptics for the case of Plancenoit and a more scientific approach.

The basic purpose of this study is to show that *a rational study of these phenomena is possible* and that they deserve more attention of scientists, as well as adequate research.

Chapter I. Observations at ERNAGE

1. Discovery of the UAP

In the evening of December 11, 1989, Colonel André AMOND is driving on a quiet country road, the *street of Sart Ernage*. He comes from the village of Ernage, where he is residing, and is accompanied by his wife, sitting on the right front seat. They are going to pick up their son at the railway station of Gembloux. At **18:45**, local time, they arrive at *Tri Masset* (T on figure 2). It is dark, but the sky is clear, since the Moon is shining and stars are visible. The temperature is close to 0° C.

When AA is about to pass the transverse way at Tri Masset, he looks out for possible headlights of a car. That's how he discovers a group of strange lights at his right side. He stops then at the point A, to look more carefully. There are *three or four luminous panels* of white-yellow color, with an orange tint like the setting sun in winter. These lights are peculiar, since their shape is trapezoidal. Their luminosity is steady, but below this ensemble, practically in the middle, there is *a red pulsating light*. Its upper part is flat and close to the yellow lights, while the lower boundary forms a circular arc (figure 3a and 3b). All separations are clearly visible, but AA doesn't see any supporting mass.

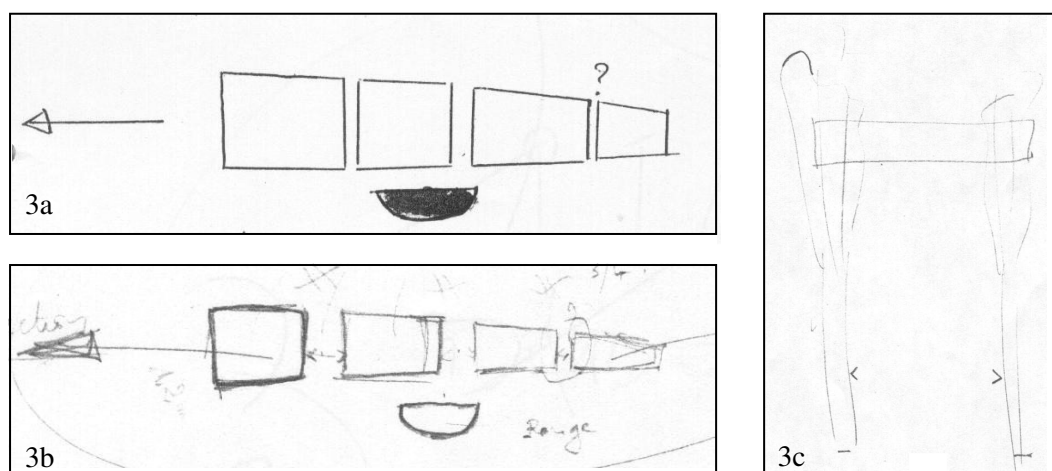


Figure 3: Sketches made by Col Amond of the luminous panels and the pulsating red light for his letter to the Ministry (3a) and the report (3b). At B, the luminous phenomenon is seen behind two poplars (3c).

The group of lights is situated in the sky, in the direction of the small wood at *Les Mottes*. Much further away and closer to the horizon, is the *Mellery tower*, which is illuminated when it is dark. It is a radar and communication tower for SHAPE at Casteau (Mons) and NATO in Evere (Brussels). AA knows this tower very well, since he had verified the calculations for its stability when it was installed during the seventies. Although this tower is situated at 7 km from the witness, it is clearly visible at the horizon, while the strange lights are higher in the sky. The colonel thinks at first that the lights could come from this direction, but having stopped, he observes a lateral displacement with respect to the tower. *The motion is horizontal and very slow*. Since all these unexpected lights remain in a constant relative position, they should belong to a solid object, but AA doesn't perceive it. Afterwards, he can't remember if there were three or four panels, as indicated by the question mark in the figures 3a and 3b. The *trapezoidal* outline is certain, however.

He drives then from A to A1, but never faster than 50 or 60 km/h. On the contrary, he slows down several times when he looks towards the lights. The velocity is then reduced to 30 km/h and sometimes to 10 km/h. The lights are advancing in the same direction, but more slowly, since they do only catch up when he slows down. The elevation seems to remain constant with respect to the easily discernable horizon and AA doesn't notice any change of the apparent size of the yellow panels and the red pulsating light. Since he couldn't observe the lights without interruption, he can't be absolutely sure, but he has the impression that the motion is *horizontal and parallel* to the street of Sart Ernage between A and A1. It is impossible to evaluate the distance, especially at night, but since he knows that the Mellery tower is higher than 100 m, he has the feeling that the UAP is progressing at an altitude of 200 to 300 meters (letter and report).

The colonel sees the horizon with the Mellery tower at about the middle of the right front window, but to see the group of lights, he has to incline his head somewhat towards this window. He tells his wife about the lights, but she is sitting higher and couldn't see them without putting her head closer to

the window. She doesn't care, since even without looking, she is convinced that it has to be an airplane. They ignore, indeed, that some people had recently spoken about strange things that appeared in the sky, but AA is intrigued. *He doesn't understand what happens*, since the moon light is not reflected by the surface of this object and there is no noise, as expected for normal aircraft.

Colonel Amond is so amazed that he doesn't think at trying to evaluate the angular length of the row of panels, but it was several times longer than the apparent diameter of the moon. Moreover, the lights had to be close or large enough to allow for an easy recognition of the dark separations. AA stops the car at A1, where he stays until the mysterious phenomenon is nearly disappearing behind the trees at the farm of Sart Ernage (report). The lights are then seen through the windshield. Anticipating the disappearance, AA decides to drive to the other side of the farm, to see if it reappears.

2. Reality of the phenomenon

At the point B, just before the street is turning towards his left, AA slows down and incidentally sees that the lights are passing "*behind the two first poplars*" they do reach. In December, they have no leaves and branches are now visible in front of the luminous panels. AA is sharply observing the UAP, since he told the first investigator: "*I evaluated its **apparent height** to 2/3 of the height of the trees and its **apparent length** did correspond to the distance that separated these trees.*" This is indicated on his sketch (figure 3c) and is equivalent to a measurement. It results from a fortunate coincidence, but also from the curiosity and presence of mind of the observer. The distance of the lights behind the poplars is unknown, of course.

After seeing this passage, AA accelerates and drives as rapidly as possible to the other side of the farm, but the darkness and the turning street doesn't allow for fast driving. It takes some time before he reaches B1, where he slows down. The street is rising and makes a slight turn towards his left. He looks then towards the right, but the group of lights advanced more slowly than he did. Being just beyond the point where the street turns, he rediscovers the lights in the rear right window. They are emerging at about the top of the wooded area. Figure 4a is extracted from the computer simulation (VOB2, photo 2.15) and figure 4.b is the drawing that AA made during the new investigation, when we were standing at B1. He represented only three panels, as in the computer simulation, but he started to draw the general outline and then the divisions. Finally, he added the red light and some poplars.



Figure 4: Computer simulation (4a) and Amond's sketch (4b) of the trees and lights seen at B1.

In his letter, the colonel told only what happened after he saw the lights at B1. He stated that they appeared at the height of *the last third of the trees* behind the farm (appendix 1). He meant the poplars. Probably, he didn't mention what happened before he arrived at B1, since that were preliminary events. Now, the strange phenomenon *couldn't be imaginary anymore*. It had to be physically real, since it disappeared behind obstacles and reappeared like something of material consistency. The re-

port of the first investigator clearly stated, however, that the observations had begun before AA arrived at the farm, although it was not recorded that this happened already at the point A.

The new investigation started with an interview of **Mrs. AMOND**. Actually, she is invited to say “stop” when the car arrives at the place where she saw the lights for the first time. This happens at B1. She described then what she saw: *a row of luminous panels*, emerging at about the top of the trees of the small wood, which is still there. The lights were of yellow-orange color and the panels were trapezoidal with a progressively decreasing height. Below this row of panels, there was in the middle *a red pulsating light*. Its intensity changed over the whole surface at the same rhythm. When asked to show how fast, by closing and opening her hand, she indicated that two maxima were separated by about one second. All these lights were moving together, as if they belonged to a solid object, but being asked if she had seen it, she said: “*no, I assumed that there had to be something to carry the lights. I couldn’t see it.*” How many luminous panels did you see? She answered: “*three*”

In this regard, AM wants to stress the fact that initially, AA wasn’t sure if there were 3 or 4 luminous panels (letter and report) and Mrs. Amond had only told the first investigator on January 3, 1990, that she saw “*several lights*”. The number of panels seemed less important to both witnesses than their general appearance and their behavior. The graphist who realized the computer simulation had necessarily to choose between 3 or 4 moving panels. He opted for three, since that was easier for him and the spectators. This process perturbed the memory of the witnesses, but all other details provided by both of them remained consistent. When AM asked Mrs. Amond at B1 what she had thought when she discovered this phenomenon, she said: “*nothing*”. Having no preconceptions, she thought, of course, that it had to be something normal, although she heard no noise coming from there.

3. The great surprise

Let’s return to the initial events. Having seen the reappearance at B1, Col. AMOND drives towards the highest part of the street, to have a better view of what might happen. He stops at C (figure 2), and shuts down the motor, while his wife opens her window. They prick their ears, but **can’t hear any sound** coming from there. They can only perceive a weak traffic noise from the road N4 (Namur-Wavre). The lights continue their silent, very slow horizontal motion. AA leaves then the car. The left door remains open, but the lights are on, to warn eventual traffic. While he goes to the front of the car, AA looks at the full moon and takes then a stand just before the left front light of the car. Mrs. Amond leaves also the car. She goes to its right front corner and observes from there, but without standing in the light of the right head light. When AA looks again towards the UAP, there is a change!

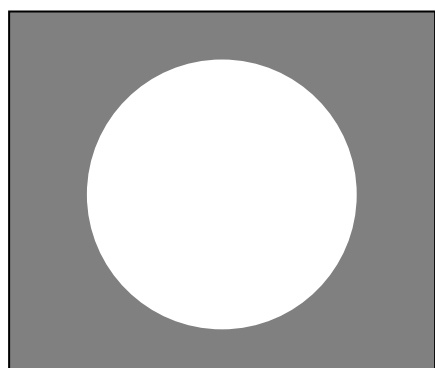


Figure 5: The approaching white light.

According to the first investigator, this happens when the phenomenon has reached the direction of the small wood behind the farm of *la Gatte* (figure 2). The UAP is higher in the sky, but instead of the yellow panels and the pulsating red light, there is only **a round white light** (figure 5). It is directed towards the witnesses and coming closer. Its luminosity is constant, uniform and very intense, but not blinding. The boundaries are sharp. The altitude decreases. It seems to be a head-light, pointed towards the witnesses, but its apparent diameter is “*two times that of the moon*” (appendix 2) and there is no beam that illuminates the ground.

AA saw the full moon just before, but we don't know if this comparison corresponds to the closest distance or not. At the site of observation, the colonel spontaneously said during the new investigation that the distance of closest approach could be smaller than 100 m and the apparent diameter of the circular light could then be larger than two times that of the moon. AA had told the first inquirer: *"I can't remember how the object changed its heading. It came in our direction (lower than the top of the trees behind it) and the intensity increased. My wife got frightened and told me: "start". I also felt a certain apprehension, since I considered this behavior as being aggressive."*

Mrs. Amond's testimony is particularly important. She saw the change: *"When it reached the wood, the object seemed to stand still and a very luminous white light was directed towards us. I got frightened and said to my husband "start". I didn't dare to look at it any more"* (report). She must have been extremely frightened, since she didn't want to see anymore what might happen. During the new investigation, she described the white round light, while we were standing at C. AM asked her if she had seen something around it. She answered: *"no"*. There was **no visible mass**, supporting this light and no sound. When asked, how close it did come, she said: *"twenty meters, at eye level"*. This was not the result of a measurement, of course, but a spontaneous expression of the **intense fear** that she had experienced. She was terrorized and reacted in panic. This doesn't happen when a light is at a distance of about 1 kilometer, for instance. When the skeptic Roger PAQUAY did assume this distance for his calculation⁹, he should have taken this element into account.

When she filled out the questionnaire, she had to describe the brilliance of the light, by choosing between: dazzling (éblouissant), strong, average, low and very low. In agreement with her frightening experience, she wrote: *"dazzling"*, while AA drew a circle around *"strong"*. He mentioned in his note to the Ministry of Defense that *"only an enormous white light was visible"* during this phase. *"It was larger than the headlight of a big transport aircraft... The object with this enormous, anomalous luminous mass showed itself somewhat aggressive... We heard no engine noise... This object was silent!"* At this instant, he feels also insecure and responds to the frightened call of his wife by rapidly returning to his seat, but when he is still upright between the door and the body of the car, he looks again towards the phenomenon. He didn't see how this happened, but it is now obvious that *"the object is engaged in a maneuver. It is nose up."* That's an essential part of the observations.

The object is banking towards its left side and climbing in an acrobatic way. It displays its ventral side, which is oriented towards the witness at a very steep angle. This is shown in figure 6, taken from the letter. The report contains a very similar sketch and explains it. There are *"three white lights, forming a triangle... The red light is situated in the middle. Its diameter is 2 to 3 times larger than the white lights. They are separated by 6 to 10 meters, but the top light is 3 to 4 times more intense than the other white lights"*. You have to imagine that you do only see these lights and no supporting mass. AA is extremely astonished, since the Moon does illuminate the fields. **No surface reflection**. Not even a perceptible contour.

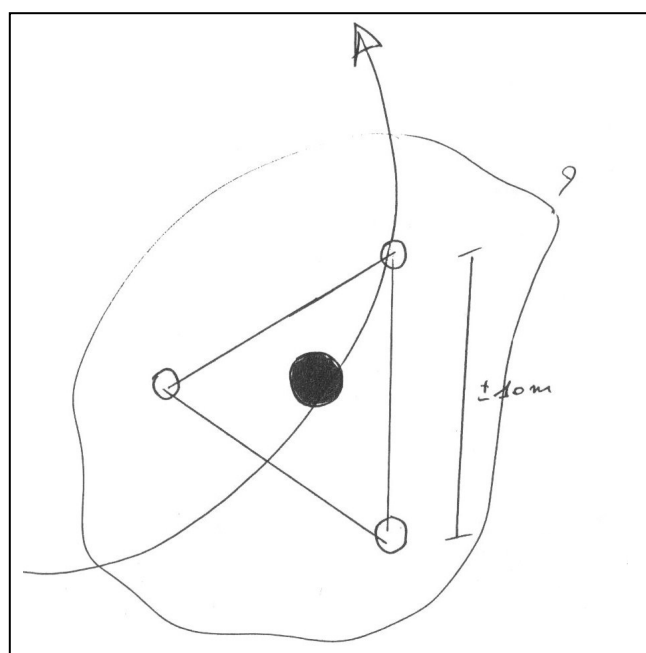


Figure 6: The ventral side of the UAP.

It's weird. AA sits down, but continues to observe. In his letter he provides the following description: *"Three white lights that are smaller than the previous one have appeared. They form more or less an equilateral triangle... The distance between these white luminous spots is estimated to about 10 meters."* He calls it "paradoxical" that he can't see the mass that surrounds the triangle formed by the white lights. Moreover, he notes in his letter to the Ministry of National Defense that *"the maneuver made by the craft is majestic, slow. The curve is tight."* It is not necessary to move the head or the eyes to see the object's turn, as one would have to do for a Boeing or similar aircraft.

4. Rapid departure

To observe the rising motion of the object, AA is obliged to lower his head somewhat towards the steering wheel and to look through the upper part of the windshield. The object restores its horizontal attitude and darts away, so that AA can now only see the protruding and pulsating red light. He turns the motor on. The accelerating object gets *"rapidly out of sight in the darkness of the night, towards the SSE"* (report), but the whole observation did last 5 to 8 minutes (letter).

After the rapid departure of the flying object, AA closes the window, but while he is doing this, he hears a train that is passing at his left side (figure 2). The noise is easily detectable at about 750 m, even with the running motor, while previously, he heard no sound at all coming from the much closer flying object. The illuminated windows of the train remind him of the row of panels. After these events, he picks up his son at the railways station of Gembloux and is home again at 19:05.

5. Another witness at ERNAGE

When we analyzed these observations, it became clear very soon that the first investigator had simply *assumed* that when the object was discovered, it was at the horizon, above the trees near *Les Mottes* (figure 2). He thought then that the flying object moved along *a linear trajectory in the North-South direction*. It could then pass between two groups of trees at the ONE colony (Oeuvre Nationale de l'Enfance). Figure 2 shows, however, that this passage would not have been visible from B and B1. On site, this is even more evident. Figure 4 shows also that the object appeared close to the trees at the farm of Sart Ernage. Unfortunately, we can't ask the first investigator why he made this choice, since he is dead, but we know that this was his first case, which could happen at the beginning of the wave. He did not yet know that the flying platforms could come quite close to the witnesses. His prudence is understandable, but requires reconsideration.

Actually, it was only possible to assume that the trajectory was nearly parallel to the street of Sart Ernage between A and A1. The distance was unknown. This problem reminded AA of what a neighbor had told him in 1992, after his first appearance on television⁴. Mrs. **Huguette MARITS** (HM) was convinced that she had seen the same UAP. According to the memory of AA, this happened also on December 11, 1989. He went thus to her home (on October 3, 2008) and collected enough information to justify a meeting (on October 5) for further investigation.

The interview was conducted by AM, in the presence of AA and PF, who documented it on video. It turned out that in December 1989, HM did work in Brussels. She always arrived by train. It was dark and while she was walking home on the silent village street. Suddenly, she became aware of the presence of *a group of lights* at her left side. It was between 18:30 and 18:45. We could ascertain later on that her train arrived at 18:25 and that it takes about 13 minutes to get from the station to the observation site, which is close to her home. It was thus about **18:38**, local time, when she saw what she has

represented in a drawing (figure 7). She prepared it during the morning of the day we met. Here is the account of her remarkable observation.



Figure 7: Mrs. Marits discovers four lights in the village of Ernage.

She is walking on the right side of the street, when she realizes that there are lights behind the trees on the other side of the street. She distinctly sees three round lights, forming an equilateral triangle. A larger red light is pulsating in the middle. The other lights are yellow and steady. All lights remain in fixed relative positions with respect to the leafless trees, but *no supporting mass is visible*. Moreover, HM doesn't hear any sound and notices no movement. Getting frightened by these oddities, she hastens her pace, to reach her home as fast as possible.

Being alone, she feels insecure. She takes her heels and doesn't even look anymore if the lights are still there. Her home and shelter is nearby. When she gets there, she immediately tells her husband and asks him to look out. Nothing special can now be seen, but her husband doesn't doubt her words and understands her attitude. It couldn't be a plane or helicopter, indeed, since they know their position lights and the noise they make. They had recently heard on television that some persons spoke about strange things, they had seen, but this did neither induce confabulation, nor procure a sense of security. It simply meant: *"I am not the only one who is seeing strange things."* Nevertheless, like many other witnesses, she did only speak about her experience to close relatives and some colleagues at her working place. She is not at all what some skeptics did call a "fantasy prone personality".

She saw the lights she described only during a short time, but she observed them with utmost attention. Since she didn't notice any motion, the object was either at rest or moving very slowly, but she saw *the ventral side* of an object, where the lights had the same disposition as in figure 6. Like the colonel, she saw only the lights and not the object itself. We can't assume that the platform was engaged in a banking maneuver at exactly the moment where she happened to look at it. It is *possible that it stayed at rest in a vertical position*, since there was another observation where a triangular platform remained suspended in air, while rotating about a vertical axis, so that it alternatively showed its ventral and dorsal side (VOB1, 206-8, VOB2, 262-8). If that was possible, by compensating the weight of the object, it could equally well remain motionless. The photo of PETIT-RECHAIN shows also the ventral face of a platform with a very steep inclination (VOB1). The picture proves that there was only a very slight rotation during an expose time of one or two seconds¹³.

6. Characteristic features

When Colonel AMOND wrote to the Ministry of Defense, he called special attention on four astonishing characteristics. Recently, he made them more explicit, by adding some comments.

1. *“The slowness of the movements of the flying object, in contrast to its final rapid motion.”* When I was driving, I had to wait until it cached up, but at the end, it displayed a tremendous acceleration and flew off at very high velocity.
2. *“The mass, which had necessarily to be distributed around the lights, did not reflect the moon light and was not visible.”* The moon was standing in the sky, behind the witness. Could its rays be deviated towards the rear-side of the object?
3. *“The lack of engine noise.”* No sound was heard, not even when the motor of the car was shut off on the lonely country road, devoid of traffic at that time. Slightly later, it was possible to hear there the noise made by a train that was passing much farther away.
4. *“For me, it is clear: it was neither an AWACS, ULM or helicopter, nor a hologram”.* The colonel discards thus any conventional explanation, but he insists that *“some kind of intelligence was involved”*, since the flying object deviated from its course with a specific purpose. He doesn’t know if this “visit” did result from curiosity or aggressiveness, but it was not accidental. The motions of the group of lights were always coherent and attributable to a flying object, although the maneuver was amazingly slow. The approaching light was very intense, but had a sharply defined boundary and didn’t illuminate the ground.

When we met Mrs. MARITS, she didn’t remember the day of her observation. That was less important for her than what she saw. AM contacted thus her son, who had been one of his students. He confirmed that his parents spoke about that event, but he had also forgotten when this happened. We know, however, that there was a marked increase of the number of observations on December 11 and that even for this particular evening, they couldn’t be attributed to a single object. However, Mrs. Marits saw what AA did also observe (figures 7 and 6). Since the time sequence (18:38 and 18:45) is also adequate, ***it is very probable that they saw the same object.***

The only difference concerns the color of the 3 lights that formed the equilateral triangle. Instead of the usual white color, she mentioned a *yellow* color, but this could eventually result from the computer simulation that she had seen on television. Mrs. Marits remembers that it wasn’t raining, since she had no umbrella. She doesn’t know any more if the Moon was shining, but she clearly remembers that the contour of each light was sharply defined and that there were no light beams that illuminated the surroundings or intermediate plants. The lights were not dazzling. Actually, she compared its intensity to that of the white fluorescent tube in her kitchen.

Figure 7 can be used to draw some conclusions. Since HM is accustomed to paint, by copying post cards for instance, with a change of scale, she has a sense of proportions. The apparent height of the center of the lights can thus be determined by means of the trees. Measurements, performed afterwards on the terrain, where there is still an oak and a cherry tree, allow us to say that the line of sight did probably pass at a height of about 8 m above the ground, at a distance of about 40 m with respect to the witness.

The actual height H and the actual distance D of the lights behind the trees are unknown, but we get a ratio $H/D = 1/5$. This corresponds to an angle of about 11° . When $D = 150$ m, for instance, $H = 30$ m. It follows from figure 7 that the distance between the lights, which formed an equilateral triangle, was then of the order of $H/2.7 = 11$ m. The witness was looking from M towards free fields at the northern border of the village of Ernage (figure 2). We don’t know in what direction the object departed, but it is probable that it moved towards the right, since one of the white lights would then be at the front edge as this was usually observed (figure 7).

Chapter II. Analysis of the observations

1. Astronomical and meteorological data

On December 11 1989, the Sun was setting in Ernage/Gembloux at 16:36 local time. At 18:45, the full moon (99%) was standing in the East (azimuth 85°) at an elevation of 31° . These data result from an astronomical computer program (Tellstar). They confirm that the fields were illuminated by the Moon and that the object should have been visible.

Renaud LECKET tried to make the helicopter hypothesis more plausible for the Ernage case, by stating¹⁰ (p.5) that the Royal Meteorological Institute (RMI) at Uccle/Brussels provided the following information for December 11-12, 1989: *“there was fog at Bierset, Gosselies and Chièvres on December 11 (horizontal visibility lower than 200 meters at the time of maximum opacity).”* He adds that *“the presence of local veils of fog above the fields around Ernage at the sighting time cannot be excluded. Light sources that show through a fog layer can appear larger than they actually are. The fog can also explain why the object itself remained invisible”*.

Once again, the actual facts are not taken into account, since AA had clearly mentioned in his letter, published in VOB1 and thus known by RL and his collaborators, that *“the sky was clear. There was full moon.”* Since the Mellery tower was visible at a distance of 6.95 kilometers, we can even add the atmosphere was very transparent close to the ground.

The data sheets of the RMI are available at Belgian Universities and surely at the RMI, at least on demand, although the contrary has been suggested⁹ (p.4). They prove that it had been freezing on December 10, 1989. At Gembloux, the temperature fell to -4.5° during the night and reached only 5° during the day, since the weather of Central Europe was “determined by a high pressure zone.” The air was dry, but the RMI predicted for Monday 11: *“Locally persistent mist, elsewhere the sky is clear. Maximum temperatures of $+1^\circ$ to 5° , Minima of -2° at the coast and -8° in high-Belgium.”* At 08:00, local time in the morning of December 11, 1989, the temperature was still -1.5° in Gembloux. Atlantic perturbations were only predicted for the following day.

To allow for the helicopter hypothesis, it has also been suggested⁹ that sound coming from the object could perhaps not been heard by the witnesses at Sart Ernage, if a sufficiently strong wind was blowing in the opposite direction. This assumption could have been verified, at least from the meteorological point of view. According to the RMI data sheets, the wind was so weak on December 11, 1989 that its direction could not be recorded at Gembloux. At Beauvechain, which is situated at only 23 km from Ernage, a weak wind was blowing from WSW (figure 1). That’s exactly the opposite of what the so-called “skeptics” tried to suggest.

2. The flying object

The first important feature that has to be clarified concerns the coherence of the successive appearances of the lights observed by Mr. and Mrs. Amond. This can be done by taking into account the general properties of the objects that were so often observed during the Belgian wave. They displayed various forms and light sources, but most frequently, they were triangular platforms. Usually, one saw only the ventral side, carrying lights that are similar to those of figure 6. Since sometimes, one saw a superstructure, with luminous panels that could be “windows” or have some other function, we can imagine an object like that of figure 8.

In this particular case, the object remained invisible, but the luminous panels could be situated at the lateral side of a superstructure. It could also carry a round source of white light at its front side. This source was directed towards the witnesses when the object approached in a downward motion. Although it emitted optically visible light, it could be a detector system, using other EM radiations and was not necessarily in use, when the object was seen from the side or at some small angle.

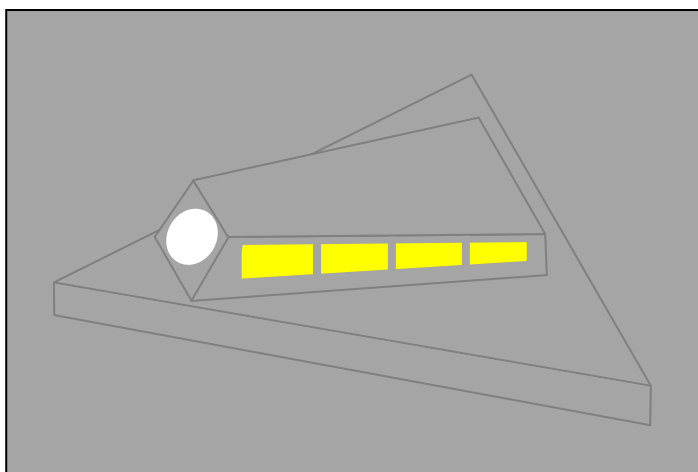


Figure 8: Sketch of a possible form of the flying object.

Only the yellow panels would then appear as well as the red pulsating light, the protruding from the ventral surface. Superstructures with luminous panels were often observed during the Belgian wave, while the three round white lights on the ventral surface were always imbedded near the edges of the triangle. However, the public ignored that UFOs could have such a form. If they had simply invented their stories, they would have described classical “flying saucers”. That was the image they had in their minds. Suddenly, many persons started to say that they had seen platforms with three or four corners and round white lights as well as a red blinking or pulsating light in the middle of the ventral side. The details were variable, but the ensemble of these observations consistently defined *a class of flying objects of specific appearance and behavior*.

In December 1989, Mrs. and Mr. AMOND didn’t know anything about flying triangular platforms and not even about UFOs in general. These objects are usually silent or nearly so, which means that they are not powered by an explosion motor. However, *the invisibility of the supporting mass* is not customary at all. It happened sometimes during the Belgian wave that the surface was fuzzy (VOB2, p.194-204), but the combination of an invisible surface with visible light sources is odd. We would not be aware, of course, of objects that have the capacity to be or to become invisible, if there was not something that betrayed their presence, but why should we be confronted with such a paradox?

To summarize what happened when the astonishing flying object was observed from B1 and C, we present a panoramic view (figure 9). This drawing is based on real photos of the landscape and the statements of the witnesses. The motion was horizontal until the white light was directed towards the witnesses. It approached the witnesses in a descending motion. We don’t show the ventral side of the banking and rising object (figure 6), since we don’t want to follow the example of the computer simulation. The witnesses did not say, indeed, that the mass was transparent. He asserted only that he didn’t see the surface by means of diffused light and that he couldn’t perceive any contours.

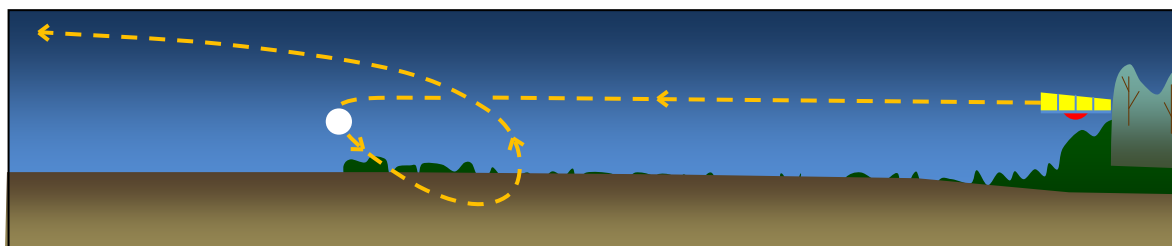


Figure 9: Panoramic view of the motion and the lights seen at B1 and C.

The graphist who realized the computer simulation tried to represent an invisible object that carried lights and to suggest the continuity of its motions, by showing progressive transformations of the frontal white light (VOB2, figure 2.16 and 2.17). These transformations have not been observed by AA. Although he was present when the computer simulation was realized, he didn't protest, since computer simulations were still very tedious at the beginning of the nineties and he was aware of the difficult problem the graphist tried to solve. He didn't want to substitute some virtual reality to observed facts, but to make apparent magic more comprehensible.

There has been discussion about the real size of the approaching white circular light, since the first investigator had proposed a probable trajectory that seemed to imply that this light was at a distance of about 1 km when it had an apparent diameter of 1° . This is two times the apparent diameter of the Moon. The real diameter of the white circular light would then be $\text{tg}1^\circ$ times 1000 m, which yields 17.5 m. That's too large with respect to the ventral side (figure 6), but this objection is not valid. Figure 2.21 of VOB1 had not been drawn by AA and he didn't even know the content of the report. When he was asked, he answered that the distance of closest approach was of the order of 100 - 200 m. At the observation site, he mentioned that 50 m would also be possible. Let's assume **100 m**. The diameter of the great white light would then be **1.8 m**. When we consider the range of sizes that have been reported for lights during the Belgian wave, this is not exaggerated any more.

3. Two critical lines of sight

Since the lines of sight at B and B1 are converging, *the trajectory has to be closer* than the point where they meet one another. The line of sight at B1 is defined by the edge of the wood, which is still there, but the line of sight at B was difficult to establish. Of course, the UAP passed behind two poplars, as indicated in figure 3c, but where were they situated? We were sure that there were *two rows* of poplars in 1981, indicated by dots in figure 2, but poplars are fast growing trees. They are cut and replanted. Our field investigation disclosed that great poplars at the north side had been cut in 2007. AA and AM tried to locate the stumps of the previous generation, but no trace was left. We thank the game-keeper and his son for their help, but our problem couldn't be solved that way.

We bought then from the National Geographic Institute (NGI) an aerial photography that had been taken in 1985. It proved that the great meadow behind the farm was then *totally* surrounded by poplars, forming the contour 1 to 7 in figure 10. The length of the shadows indicated that this were high poplars. The owner of the farm, *Count Le Hardy de Beaulieu*, told us that these poplars had been planted in 1960, but that those of the rows 1-4 had been cut in 1988. New ones were planted in the spring of 1989 between 3 and 4. But in 1985 there existed already a row of small poplars between E and S.



Figure 10: Aerial Photography taken in 1985

We thank the count for his kindness. He showed and lent us even another aerial photography that had been taken at oblique incidence in the spring of 1983 (figure 11). It proves that the farm is surrounded by cultivated fields and that the region where the observations took place is very flat. We indicate the points A, B and B1. The row of young poplars is clearly discernable.



Figure 11: Aerial photography of the farm of Sart Ernage, taken from the south in 1983.

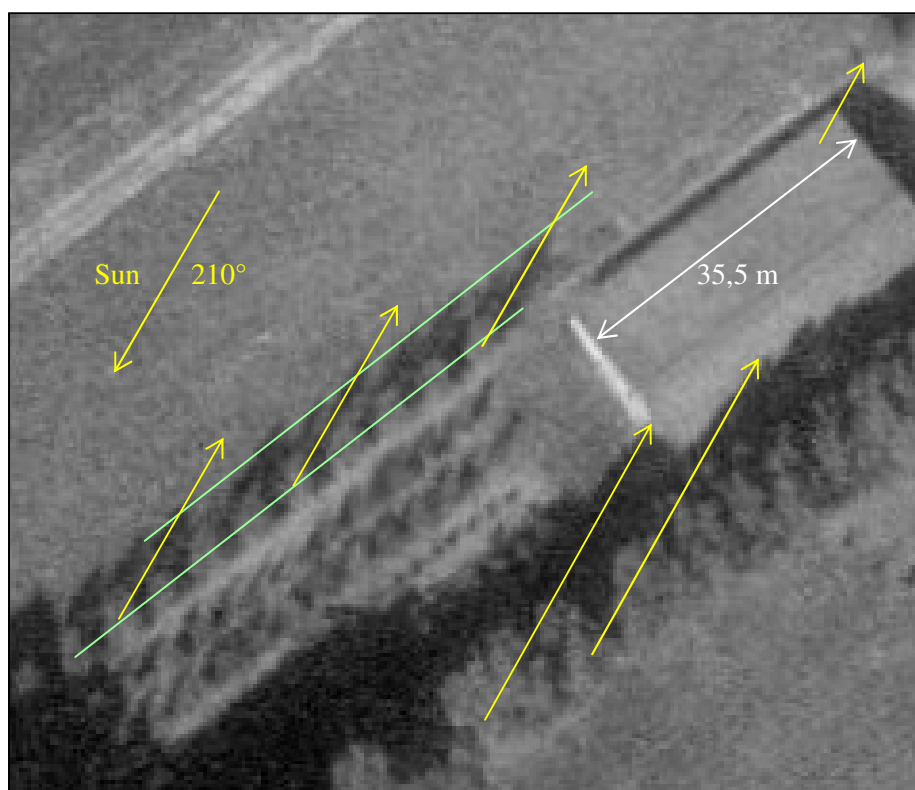


Figure 12: Indirect measurement of the height of the poplars in 1985

Figure 12 shows a magnified part of figure 10. The direction of the shadows allows us to determine the direction of the Sun: 210° . This picture had been taken on 1 October 1985. We could thus establish with Tellstar that the Sun was at the measured heading at 14:11, local time, and that its elevation was then 32° . This allowed us to calculate the average height of the young and older poplars in 1985.

It is sufficient to determine the average length of the shadows. This was done by comparing it with the measured length of the roof of the hangar. We got 14.8 m for the young poplars. Their average height in 1985 was thus equal **9.2 m**. The shadows of the older poplars were 2.7 times longer than those of the young poplars in 1985, so that their height was then **24.8 m**.

We got another aerial photography from the NGI, taken on May 3, 1990. The rows 2-3-4 of figure 10 had been completely cut, but the rows 5-6-7 were still there. The row 1-2 had partially vanished. This defined *the situation that existed in December 1989*. The line of sight at B1 was quite obvious, but we were not yet sure if we had to consider the line of sight BE or BF. The resolution was not sufficient to determine the height of the poplars in the spring of 1990.

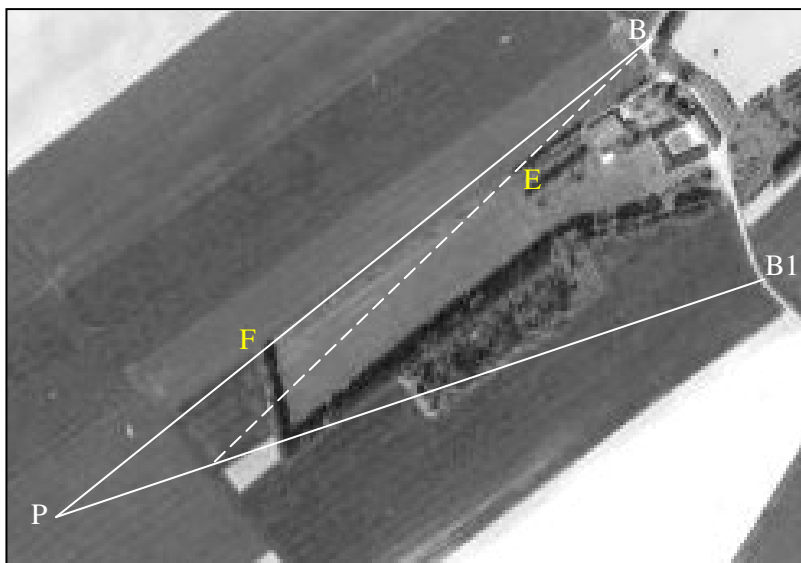


Figure 13: Aerial photography of 1990



Figure 14: Aerial photography of 1997

We did this by means of another aerial photography, provided by the *Région Wallonne* (figure 14). It solved a puzzle. All poplars of the row ES were cut, indeed, before 2008. We tried thus to locate stumps, but the two last ones (near E) were bigger than closer to the street. The poplars of this row have not been cut at the same time. With the kind aid of M. Ferrier, we could establish that this picture had been taken on August 11, 1997. As for figure 12, we calculated the average height: 22.7 m. They had thus grown about 1.1 m/year, which falls within the normal range. In December 1989, they had thus a height of **13.6 m**.

When we assume for the great poplars a growth of about 1 m/year, they had in December 1989 an average height of **29 m**. As we mentioned, we were not immediately sure if the two poplars of figure 3c were situated at E or F. We tried both possibilities, but retained F, since the row 4-5 was still there in December 1989 (figure 13). Moreover, this explains the qualitative drawing of the first investigator (figure 15) and what he wrote in his report. The poplars at F were, indeed, the “two first poplars” the UAP could reach and they “were clearly outlined on the horizon”.

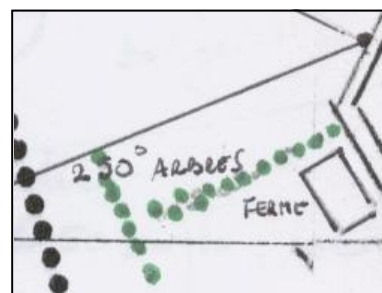


Figure 15: From the report.

4. Trajectory and velocity of the flying object

We are now ready to start the analysis of the observations, to find out if all available data can be combined in a logically consistent way. We have to take into account qualitative as well as quantitative data. For instance, when the object was observed between A and A1, its motion seemed to be *uniform, horizontal and parallel to the street* of Sart Ernage. This could be an approximation, although a similar behavior was observed by the gendarmes and other witnesses in Eupen¹² on November 29, 1989. To avoid arbitrariness, we will thus not assume at the outset that the trajectory was horizontal and parallel to the street of Sart Ernage. We will only assume that the trajectory was linear. We use an aerial photograph of 1995, provided by the IGN in digitalized form (figure 16).



Figure 16: Aerial picture of 1995 with the critical lines of sight at B and B1, a fraction of the trajectory (in yellow) and the rows of high poplars that were present in December 1989 (in green).

The precise day this picture was taken is unknown, but we know already the height of the young and older poplars in December 1989. Some of them were not present anymore in 1995. We indicate therefore the positions of those which were still there in December 1985 by green lines. We measured the distance between the stump at the edge (E) of the row of younger poplars and the street (S) by means a 50 m metallic measuring tape. It yielded the value $ES = 201.4 \text{ m}$, which will be taken as the basis for the determination of lengths on figure 16. As shown in the previous section, we can now

Assuming that the luminous panels are parallel to the trajectory, their length $L = (s \cdot x/d) (\sin\beta/\sin\theta)$. The lowest value of L would be obtained when $x = d$ and $\theta = 90^\circ$. This yields $L > 5.8 \text{ m}$, but the value of L increases with the distance x and it depends on the inclination of the trajectory (θ).

The apparent angular length ϕ of the luminous panels has a fixed value for the critical line on sight at B, since $\tan \phi = (s \cos\beta)/d$, so that $\phi = 0.3^\circ$. This proves that the observation was possible, since the angular diameter of the Moon is 0.5° . But *when the luminous panels were seen from A*, their apparent angular length ϕ was different, since it depends on the distance D of the panels and their orientation with respect to the witness. Its value could be estimated, however, for the initial point of observation A. At the beginning of the new investigation, it was only stated that the angular length was equivalent to several times the apparent diameter of the Moon. AA had the impression that it could be three to four times larger. This would yield $\phi = 1.5 - 2^\circ$. Later on, we tried to increase the precision. AA provided three different comparisons.

1. Visually, the angle ϕ was about $\frac{3}{4}$ of the thumb at arm's length or $1.9/65$ (centimeters), $\phi = 1.7^\circ$.
2. It was also smaller than or equal to $1/5$ of the width of the group of trees, which emerges above the horizon near Les Mottes (figure 2). This yields about $50/1280$ (meters), or $\phi \leq 2.2^\circ$.
3. The ensemble of luminous panels was roughly 5 times longer than the second lowest transverse tie of the Mellery tower. Knowing that the tower has a height of 160 m, this value (15 to 20 m) could be determined by photography. This amounts to 75 to $100/7000$ (meters), or $\phi = 0.6 - 0.8^\circ$, but this value is the least certain.

We will thus assume that at the initial A, the apparent angular length of the luminous panels $\phi = 1.7^\circ \pm 0.3^\circ$. According to figure 16, the distance D between the UAP and the street of Sart Ernage is a linearly increasing function of the distance y between the observer and the point B. The distance between B and the crossroad at Tri Masset is 588 m (figure 2). Since the point A corresponds to an electrical appliance at the side of the road and since the measured distance $AT = 58 \text{ m}$, we get for the point A the value $y = 530 \text{ m}$. We can thus evaluate the apparent angular length ϕ in terms of the apparent length L' and distance D of the luminous panels by means of the following relations:

$$\tan \phi = \frac{L'}{D}$$

$$L' = L \cos(\theta - \sigma)$$

$$D = (y + x \cos\sigma) \tan((\theta - \sigma) + x \sin \sigma)$$

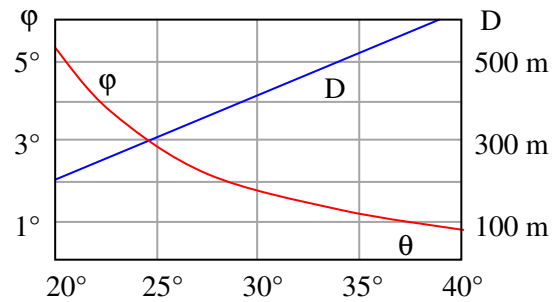


Figure 18: The angular length ϕ and the distance D of the panels at *versus* inclination of the trajectory.

The graph of figure 18 corresponds to $x = d + 20 \text{ m}$, and thus to a trajectory that passes close to the poplars at F, as in figure 15. When then distance $x = BX$ is increased up to $x = d + 100 \text{ m}$, the distance D increases, but the angular length ϕ is nearly not affected. Numerical calculations reveal that $\phi = 1.7^\circ$ corresponds to $\theta = 30.6^\circ$ and $D = 430 \text{ m}$. It should be noted that the relations are non linear and very sensitive to a decrease of the value of θ . The range of uncertainties for ϕ implies that θ could be situated between 28.7° and 33.0° , while D would vary between 390 m and 480 m . The hypothesis of a

parallel trajectory would imply that $\theta = \sigma = 21.8^\circ$, which leads to the constant value $D = 250$ m, but $\varphi = 4.2^\circ$, which is too large. The essential conclusion is therefore that *the trajectory was not strictly parallel to the street of Sart Ernage* between A and B.

Now we can use the most probable value for θ to find out how the distance x between the trajectory and the observer at B would affect the values of the velocity v of the flying object, the length L of the panels and their height H above the ground. We got established already general formulas for v and L . The height H follows from the fact that the line of sight passed at $2/3$ of the height of the great poplars situated at F, thus at a height close to $h = 21,8$ m, seen at the distance $d = 574$ m. This means that $H/x = h/d$. Since v , L and H are linear functions of x , we consider only two particular cases.

Distance BX	Velocity v	Height H	Length L
$x = d + 20$ m	13.6 km/h	22.6 m	11.7 m
$x = d + 100$ m	9.5 km/h	25.6 m	13.3 m

The luminous panels reappeared “at the height of *the last third* of the row of trees behind the farm of Sart Ernage” (appendix 1). This means that their angular elevation was somewhat lower than when they disappeared behind the farm. This is compatible with the idea of a horizontal motion above the flat ground behind the farm, since the distance $y = B1Y = 660$ m, while $x = BX = 596$ m for the trajectory of figure 15. If the estimations had been perfectly exact, we would get $H/x = (3/4)u/d$, where u is the constant average height of the great poplars and $d = BF$. We should also get $H/y = (2/3)u/g$, where $g = B1G1 = 545$ m. Thus $H/u = (3/4)x/d = (2/3)y/g$, or $y/x = (9/8)g/d$. Since $g/d = 0,95$, we have to compare 1,11 with 1.07, which is not too bad for rapid observation.

The only way to get at least an approximate estimation of the height of the UAP above the ground between A and A1, is to recall that it was seen from inside the car, where AA had to incline his head towards the right front window to see the lights at its upper boundary. We can assume that the eyes were approximately at a distance $d' = 99$ cm from the window and at an altitude $a' = 104$ cm above the street, while the upper side of the right window was situated at an altitude $h' = 120$ cm above the same level. The last value takes into account the measured inclination of the street. The UAP was flying at a height H' with respect to the same reference level and at a distance D from the street at some point A' , between A and A1. We get then the relation $(h'-a')/d' = (H'-a')/D$. When D is of the order of 320 m (figure 16), we get $H' = 53$ m. Since this estimation is not very precise, we don't assert that the height was progressively decreasing, but as for the independent and much more accurate determination of H behind the farm, we can be sure that *the object was flying at very low altitude*.



Fig. 19: Lower elevation.

AA took a picture from inside the car and indicated the place of the light panels on the front right window, when he was at A1 and when the UAP was approaching the poplars at the farm of Sart Ernage. He didn't have to lower his head any more. This had to be expected, even if the UAP was flying at a constant height H above the ground, since the angular elevation H/D would then progressively decrease when the distance D is increased. The angular length the panels did also to decrease (up to $\varphi = 0.3^\circ$). Although some evaluations remain somewhat imprecise, we can be astonished that so much could be brought to light by means of a rational analysis, where general relations are taken into account. This is somewhat similar to the proverbial “tip of the iceberg”, which has to be mentally related to the submerged and thus not directly visible part.

6. Global view of the events at Ernage

Let's now put together the results of our analysis, which was strictly limited to phenomenological aspects. No preconceptions and no speculations concerning the nature or origin of the UAP have been used. We simply took into account what the witnesses did observe and tell us, without claiming a priori that they are not trustworthy. There is no objective reason for rejecting or transforming their testimony, although the reported facts are unusual. Actually, they boil down to the observation of *a flying object that had very peculiar properties*.

Three witnesses saw lights that seemed to belong to a rigid structure, but the object itself was *optically invisible* and made *no audible noise*, although it has been observed at relatively close distances (smaller than 500 meters or even 100 meters at closest approach). This happened even while the object performed *a highly remarkable maneuver* that would certainly be accompanied by sound for any familiar, motorized flying object. The circumstances for hearing sound were excellent, since both witnesses were standing outside the car, whose motor was shut down. There was no traffic on this isolated country street. The Moon was shining and illuminated the landscape, but the surface of the object did not reflect or scatter this light. Even the outlines of the object could not be discerned, although trees at the horizon were clearly discernable.

The object was flying *at low altitude and very low velocity*, which was demonstrated in a very convincing way by analyzing the passage behind the poplars at Sart Ernage. It is particularly astonishing that *the object was even flying very slowly and close to the ground during its impressing maneuver*, implying a very short turn and simultaneous climbing. These features will be examined more closely in the following chapter. We did only *assume* for our analysis that the trajectory was linear during the first part of the observations of Colonel Amond (figure 15). It could have followed a curved path, of course, but for flying objects it is reasonable to assume a fixed heading, at least for some time. Even if the trajectory were not linear, our conclusions in regard to the upper limit of the velocity v and length L of the ensemble of luminous panels would be identical. The height H would increase for increasing distances, but one has to accept a compromise, since possible distances are limited, to avoid unreasonably low velocities. Actually, we wanted to verify if *the trajectory*, which had been proposed by the first investigator was realistic or not. We did not only prove that it was closer, but established also some other, initially not apparent or sufficiently appreciated facts.

We propose the *probable trajectory* of figure 20. It can integrate the observation made by Mrs. Marits (at M), although the object she saw was motionless or slowly moving. Figure 7 suggest, indeed, that it departed towards the East, since triangular platforms of the Belgian wave did usually move with one white light at their front edge. The time sequence would be adequate, but since we are not absolutely sure of the day, we represent this part of the probable trajectory by an interrupted line. Then the trajectory becomes nearly parallel to the street of Sart Ernage between A and B.

Although this could not be directly observed, we feel obliged to accept that the flying object *changed its heading* after its passage behind the poplars at the farm of Sart Ernage. Otherwise it would have been too far off before it turned towards the witnesses, standing at C. We indicate this part by an interrupted line and - in agreement with the report of the first investigator - we consider that the object turned towards the witnesses when it was seen in the diction of the farm of *La Gatte*. Unfortunately, we cannot ask the first investigator any more or rely on his notes, since he is dead. We use again an interrupted line since the exact distance is not known, but these sequence didn't seem to last very long. When AA looked again towards the flying object, it had already changed its heading.

UAP had to approach the witnesses on a linear course, since they saw only the circular front light. We assume that it turned around at about 100 m from C and so sharply, that AA could follow this maneuver without moving his head or the eyes, which implies at most an angle of about 30° . The velocity of the flying object was still very low (about 13 km/h), but it departed then towards the SSW, in “about the time it takes for one breath”. We think that *we went as far as possible in our rational analysis of the observed facts, and not further than that.*

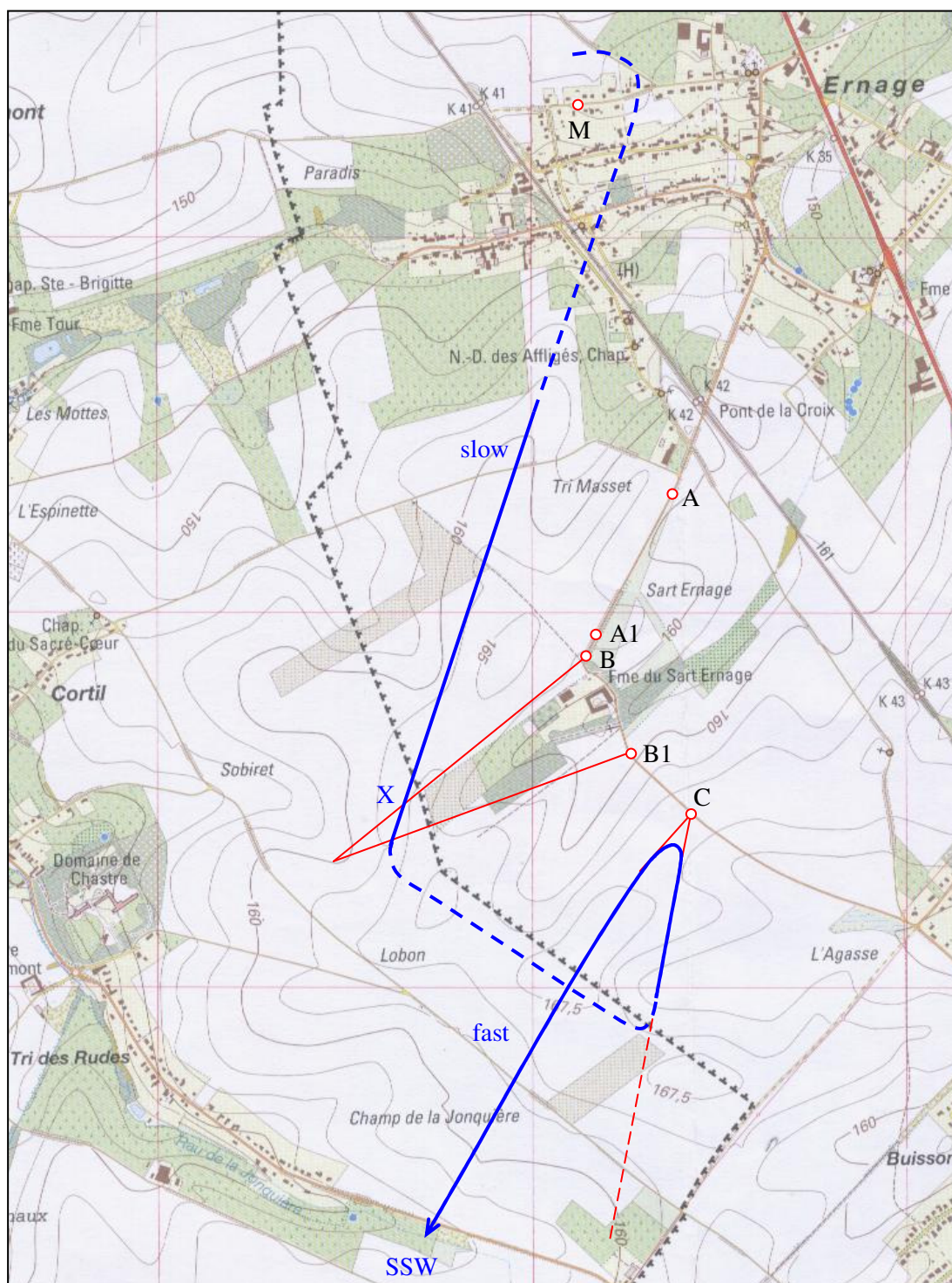


Figure 20: Probable trajectory of the UAP resulting from the observed facts and our analysis.

Chapter III. Examination of the helicopter hypothesis

1. Verifications made by the Belgian Air Force

MjGen Rtd Wilfried DE BROUWER reacted already in June 2008 to allegations that had been diffused on Internet. His message was transmitted by Patrick Ferryn, who is a member of the EuroUfoNet list. It had been claimed there, indeed, or at least insinuated that the Belgian Air Force never checked the possibility that the UAPs of the Belgian wave could be **helicopters** or some other conventional aircraft. The General considered that the initially published information (appendix 1 and 2) should have been sufficient to exclude the helicopter hypothesis, in particular for ERNAGE. Nevertheless, *he wanted to verify* and visited this observation site before the new investigation began. He contributed to the present study and after we got access to the text of RL and his collaborators¹⁰, it is adequate to quote the personality, which was in charge and more involved than so-called skeptics want to believe.

“Between 1989 and 1991, when the extraordinary UFO wave took place over Belgium, I was *Chief Operations of the Belgian Air Staff*. One of my responsibilities was the security of the Belgian airspace, which implies a continuous surveillance in cooperation with the National Civil Aviation Authorities (CAA). This is done by **four very powerful radar stations**, two civilian and two military, which are interlinked, so the duty civilian and military controllers can call up at any time the registrations of any of the four radars. All radar registrations are recorded and these recordings are kept for a well determined period. The CAA is in charge of overall airspace management but, if any intruders would be reported, it has no means to intervene. Such intervention can be done by the Air Force which has permanently two F-16 on a 5-minute Quick Reaction Alert (QRA) status. These F-16 are integrated in the NATO Defense system, but can also be used for national defense purposes.”

“The sighting of *Lt Col ir André AMOND* (AA) occurred less than two weeks after the events of 29 November 1989. These observations had been amply covered in the media and at the air staff we had received numerous questions on the origin and nature of these phenomena. Our first reaction was to verify with the CAA whether air activities had taken place during the evening of 29 November which could have explained the numerous sightings. The CAA replied that **no flight plans** had been introduced to operate in that area. Normally flight plans are mandatory for flights between sunset and sunrise, but in cases of military exercises and emergencies (ambulance or police), exceptions can be made for helicopters. However, that evening, no military exercises had taken place over Belgium. Also, the **gendarmerie** which had three Puma helicopters in its inventory, confirmed that they had not been active in that region. It is worth noting that **foreign nations**, even NATO partners are not authorized to operate over Belgium without previous approval. This is also valid for NATO exercises which have to be announced months in advance and have to follow the very strict national rules and regulations which apply during night flying.”

“If an **ambulance helicopter** had been operating, the pilot should have contacted the relevant airspace surveillance authority and communicate the point of departure, point of arrival, intentions, etc. Furthermore, these pilots have to display a well specified transponder code, which makes them visible and easily identifiable on secondary radar. In other words, depending on the case, the military and/or national aviation authorities are always informed of any aerial activities in night flying conditions. During the night of **29 November**, no such flights had occurred in the area where the sightings had been reported. Furthermore, a thorough investigation of the tapes of the Belgian radars revealed that no air activities had taken place which could have caused the reported phenomena. Yet, the media were putting the defense authorities under pressure to give an acceptable answer to the numerous ques-

tions and in the air staff, we were desperate to find the nature and origin of these phenomena. Indeed, we found it rather annoying that multiple witnesses reported air activities, which *remained unobserved by our radars and had not been authorized*. We ordered the radar controllers to pay special attention to aircraft flying at slow speed and low altitude.”

“In addition, if further sightings would take place, the Master Controller of GLONS - the radar station that is integrated in the NATO Air Defense system - received the authorization to scramble the two F 16 on QRA for on-site investigation. During the week of *11 December*, the secretary of Lt Col André Amond, who worked in the same building as the undersigned [WDB], informed my staff that his boss had made an observation of an unusual phenomenon in the area of ERNAGE. I asked for LtCol AMOND to make a report and meanwhile verified whether this observation could have been caused by any fixed or rotary wing aircraft. The answer was that no flight plans had been introduced and that none of the four Belgian radar stations had registered any traffic that could have caused this phenomenon. Also, no exercises had taken place. Our conclusion was similar to the 29 November case; *we could not determine the nature or origin of this sighting*. Lt Col Amond sent his report to the Minister of Defense, but it remained unanswered.”

“At that time, I didn’t make an analysis of the different options which could have caused this sighting, which was one of the many reported that evening. Indeed, for the Air Force it was clear that there was no air traffic in the vicinity of Ernage at the time of the observation and the Air Force was not supposed to make any official inquiries. The policy of the Minister of Defense was that, as long as there were no incidents, we had to limit our role to providing information on air activities to SOBEPS for supporting their investigations.”

2. ERNAGE revisited

“Nevertheless, some discussions started afterwards and it appeared that the map that was made by the SOBEPS investigator early 1990 and had been published in the first book of SOBEPS (VOB 1) was not fully correct. Still interested in this case and reacting to a rumor that the Ernage sighting was caused by a helicopter, I went to talk to AA, earlier this year [in 2008]. It should be said that I was convinced that his sighting was not caused by a helicopter, because I fully trust the Belgian airspace surveillance system and helicopters cannot remain unobserved by *radar*. In particular, the area where the sighting took place is flat and it is impossible to fly in a valley for avoiding radar detection. Nevertheless, I wanted to verify *technical evidence*, whether the helicopter option was a valid assumption.”

“We visited the place of the sighting and - in my opinion - AA’s story in 2008 was consistent with his declarations of 1989. He had drawn a more accurate map with the estimated track of the UAP and he gave me complementary details of his experience. I wanted to verify, however, whether *the data provided in VOB1* (appendix 1 and 2) contained evidence to conclude that the Ernage case was possibly caused by a helicopter” or if it did exclude this hypothesis.”

In his letter to the Ministry of National Defense (appendix 1), AA was very brief. He didn’t mention what happened before he passed the farm of Sart Ernage, but he reported that he saw: “three to four light panels *at the height of the last third of the row of trees* behind the farm of Sart Ernage.” These trees are much closer than those near Tri des Rudes (figure 2). It was obvious at the observation site that the witnesses couldn’t have seen the passage of the UAP behind the much more distant trees at the horizon, but this was already apparent through the computer simulation (VOB2 and figure 4). The details reported by AA call for a good angular resolution, which is incompatible with a distance of about 1.5 km, while the fir-trees at W are situated at less than 400 m from B1 (figure 2). Since VOB1 reproduced the “probable trajectory” that the first investigator had drawn, it was known that some

observations took place already before AA passed the farm of Sart Ernage, although AA reported only to the MND what happened afterwards.

It was explicitly stated (Appendix 1) that while AA is driving (from B1 to C) at a speed of 50-60 km/h, “the light panels drop behind”. If the UAP had been far away, AA would normally have the impression that it followed him at the same velocity, but he had to wait. At C, “the UAP, which *moves slowly* at my right, overtakes me and continues in the same (apparently north-south) direction.” Its velocity was thus surely lower than 50 km/h. VOB1 suggests 30 km/h. Actually it was lower, but this figure is sufficient to *exclude that the UAP was a fixed-wing aircraft*. Aerodynamic lift results indeed from the difference of air pressure above and below the wings. This calls for air motion at different speeds. Nevertheless, it could still have been a helicopter, dirigible, blimp, RPV (remotely piloted vehicle), or ULM (Ultra Light Motorized). We will thus also consider these hypotheses.

Regarding the option that the UAP would have been a *helicopter*, it should be recalled that *the normal cruising speed* of a helicopter is approximately 180 km/h. While AA was driving from B1 to C (330 m) at an average velocity of 50 km/h, a helicopter would normally have flown during the same time interval, a distance that is $(180/50) \cdot 330 \text{ m} = 1188 \text{ m}$. The car would have stayed behind and not the UAP. The objection that a helicopter is able to move very slowly is not convincing. *Helicopters and VSTOL* (Vertical/Short Take off and Landing) aircraft such as the Harrier can fly at a velocity of 13 km/h, for instance, but this would be for them nearly a hovering condition. They never do this without any obvious reason i.e. for landing, a rescue operation, etc. The reason is that *at such a slow speed they have to fly with full power*, implying very high fuel consumption. In addition, they would barely cover any distance and make a lot of noise. Furthermore, the Harriers were stationed in the eastern part of West Germany and didn’t have enough radius of action to reach Ernage at low altitude.

Another important point is that AA mentions twice his estimation of the duration of the sighting. The first time, he declares that “this part of the observation took approximately 2 to 4 minutes”. The second time, he states that “the duration of the (whole) observation is estimated at 5 to 8 minutes”. The initial investigator measured during his first reconstitution a total time of 10 minutes. According to figure 19, the length of the trajectory followed by the UAP from the instant where AA discovered the lights at A until the object performed its maneuver at C is of the order of 2.3 km. Even if the whole observation lasted only 5 minutes, the velocity of the UAP would be less than 30 km/h. The last phase lasted only 10 seconds (appendix 2). This also means that the helicopter hypothesis is not realistic. Nevertheless, RL and his collaborators prefer to believe that AA simply saw the “*SAE-330 Puma of the BAF*”. Let’s examine this proposition.

3. Contours, lights and sounds

Belgium bought 3 Pumas (SE-330C) in 1973. In 1989, they were still in the hands of the “light aviation” of the Belgian Army, but the Gendarmerie did pay 700 hours of flight time. They were stationed in *Brasschaat* near Antwerp, at 80 km from Gembloux. These Pumas were rarely used for night flights, since they had no sophisticated equipment for this purpose. This happened only for special requirements of the gendarmerie or pilot training in the vicinity of Brasschaat.



Figure 21: The SAE-330 Puma.

The gendarmerie itself bought only Pumas since 1990. When we get a closer look at the SAE-330 Puma helicopter (figure 21), we see that its external features are significantly different from those of the UAP that the colonel and his wife described. There is nothing that could be similar to *the great protruding and pulsating red light*, close to the large yellow panels. The mass and at least the contour of the helicopter should have been visible, especially in moon light. Although the SE-330 Puma has four windows on each side, they are *rectangular, not equally spaced and small*. The separations are not adequate (figure 3a and 3b) and AA explicitly stated that “the panels are of *trapezoidal* form.”

Moreover, we can deduce from profile drawings and the known length of these helicopters that these windows have a length of about 35 cm. At 440 m, they would be similar to an ordinary light bulb (6 cm) seen at a distance of 75 meters. AA *would simply have seen spotlights*, instead of homogeneously illuminated panels. Even this would only be true, if the cargo space had been illuminated with sufficient intensity, but that is also unrealistic. Helicopters don’t fly in the dark with an illuminated cabin. That *would blind the pilots* and reflections in the windshield are extremely dangerous at low altitude. The pilots use a “dim switch”. Could the cabin be dark, while the cargo space was illuminated? No, since several mechanics and members of the personnel who knew the AE-330 Puma very well confirmed that the cabin was not separated from the cargo room by a fixed partition or a curtain that might be used.

The SE-330 Puma had not only 4 great blades, but was also powered by two *Turbomeca* engines, each one of 1330 HP. This system is known to be *very noisy*. The Gendarmerie got even so many complaints in this regard, that it was decided to replace the Pumas by *Alouette II helicopters* and still later, by three *MD Explorer 900* (2 engines) and two *520 N* (1 engine). Their noise is reduced by 60%, since they apply the NOTAR (no tail rotor) technology, but their fuel consumption is higher. Members of the EuroUfoNet who observed rather silent helicopters did probably see this kind of technology, produced since 1990. The Belgian Gendarmerie didn’t use it before 1996. The older SE-330 Pumas of 1989 were particularly noisy when hovering or at lift-off. When flying a low speed, the measured sound level at 150 m was 85 to 90 dB, depending on wind direction. We know, however, that AA and his wife heard nothing, even when the flying object executed its maneuver at such a distance.

4. The head light and the acrobatic maneuver



Figure 22: Landing lights of a SAE-330 Puma.

The head light of the SAE-330 Puma has only a diameter of about **20 cm** and a power of about 250 W. The light that came towards the witnesses was different from the head light of a Puma landing in darkness (figure 22). It was bigger, white and had a sharply defined boundary, instead of being surrounded by a halo. The Puma has red lateral position lights and a blinking anti-collision tail light, which can produce reflections on the head and tail rotor blades. It should also be noted that this landing Puma has no illuminated windows and that its outlines are clearly visible.

AA stressed the fact that the approaching white light (figure 5) was “enormous” and surely larger than those of transport aircraft. Moreover, aircraft and helicopters don’t fly over the countryside with

their landing lights on. No white lights forming a large triangle and no great pulsating red light (as in figure 6) are present on the ventral side of a Puma SE-330. RL and his collaborators did not (want to) realize that Lt Col AA is a civil engineer and an experienced Army officer, very familiar with helicopters. When he says that the red light was different from “the blinking red lights that are placed on normal aircraft”, **he knows what he is talking about**. The protruding, pulsating red light has been observed on three occasions: when AA saw the object from the side, when it made its banking maneuver and when it departed from the scene. On all these occasions, the observations were consistent, although unusual and unexpected.

The white head light had two times the diameter of the moon at some particular moment. Since the diameter of the headlight of a Puma SE-330 is about 20 cm, it would have to be at a distance of 11 m to reach the same apparent of 1° . Nevertheless the so-called “skeptics” believe that no sound would be heard and that no carrying mass would be seen at such a small distance. By the way, the great angular size of the head light at a distance of about 150 m, the separation between the white lights on the ventral side, the acrobatic banking maneuver and the change from a very low to a very high velocity do **also exclude a blimp or ULM**.

AA wrote in his letter to the Ministry of Defense that the maneuver was “*majestic, slow*”. Is it realistic to assume that a helicopter could realize the observed very tight turn at very low velocity, while mounting at a very steep angle? Since AA could follow this motion from inside his car, the UAP must have been less than 30 degrees above the horizon, but the three spotlights appeared in an equilateral triangular disposition (figure 6). The angle of bank of the UAP could thus have been **60 degrees or more**. From an aeronautical point of view, such a maneuver is very special. Helicopters, in particular combat helicopters, are capable of making a turn with considerable bank, but *only* when they are flying at cruising speed. It is necessary to generate sufficient lift.

When hovering or flying **at very slow speed**, a helicopter has to keep its main propeller practically in the horizontal plane, so that the lift vector is opposite to the gravity vector. A helicopter pilot will then simply use the rudder and tail rotor to take a turn. **A banking maneuver isn't necessary and even possible** for normally powered helicopters. The same principles apply to VSTOL aircraft, such as the Harrier. Dirigibles do also turn without taking any bank, while RPVs and ULMs have the same flight characteristics as aircraft. They require a sufficiently high velocity and banking. Very small and light RPVs or ULMs can fly at relatively slow speeds, but they are excluded for other reasons: noise and general appearance.

Let us now consider **why banking is necessary** when normal aircraft has to perform a circular turn of radius r at a given velocity v . When this turn is horizontal, there are two conditions that have to be fulfilled (figure 23). The weight W has to be compensated by a vertical force and one has to apply a force F that is oriented towards the center of the circular path, to draw the object again and again in this direction. There has also to exist a propulsive force along the direction of motion, to compensate the unavoidable effects of air friction, called aerodynamically drag, but in figure 23, we consider only the forces that are acting in the transverse plane (perpendicular to the axis of the aircraft). When m is the mass of the object, the weight $W = mg$, where g is the gravitational acceleration, while $F = ma$, where $a = v^2/r$ is the centripetal acceleration. **Both forces have to result from the aerodynamic lift L** , which is always perpendicular to the direction of the wings.

For an inclination i , the vertical and horizontal components of the vector L are respectively equal to $W = L \cos i$ and $F = L \sin i$. By eliminating L , we get $a = v^2/r = g \tan i$. This means that **the radius of curvature r is determined by the velocity v and the banking angle i** . This relation is represented by

the blue curve in the graph of figure 23, for the particular case where $v = 13$ km/h and various values of the angle i between 20° and 80° . The red curve shows the variation of the required lift L , compared to the weight W . A **large inclination i** would allow for a small radius of curvature, but it **requires a very powerful engine** to produce the necessary lift. An additional rising motion would even call for a greater vertical component of the lift than W and thus more power.

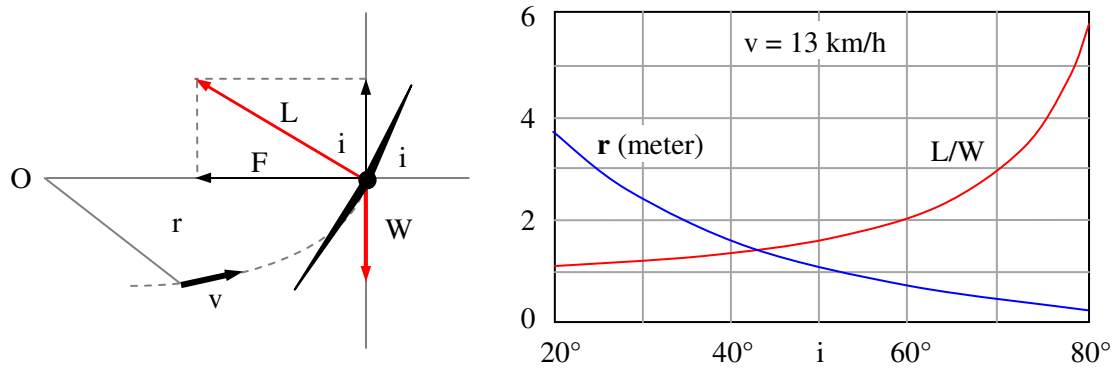


Figure 23: Banking conditions in terms of forces and resulting variations of r and L .

5. Application to a flying platform

The platforms of the Belgian wave were usually horizontal when they remained stationary or flew around at low velocities. This means that they produced somehow (without wings) a lift force that was then perpendicular to the platforms. If the lift vector had also been perpendicular to the platform that AA saw at ERNAGE, a velocity $v = 13$ km/h and a horizontal turn with a banking angle of 60° would imply a radius of curvature $r = 0.77$ m. This follows from the previous, unavoidable relations. We know that AA didn't have to move his head to observe the ongoing maneuver, but an angular width of 30° for the semi-circular U-turn implies a distance $r/\tan(15^\circ) = 2.9$ m between the center of rotation and the observer situated at C. That's too short and means therefore that the lift force was not perpendicular to the platform. It was closer to the vertical.

This conclusion has to be related to other observations made during the Belgian wave. The flying platforms had **highly remarkable mechanical properties**. There were cases¹ where they remained stationary at some very great inclination (as at Petit-Rechain) or even in a vertical position, with a simultaneous rotation around a vertical axis (as at Pont-de-Loup). These observations imply that the propulsion system of these objects allows them to **develop a force that can have any direction with respect to the platform**. It doesn't require wings and the aerodynamic lift, which results from different speeds of the air flow above and below the wings. It is produced in a completely different way, and this fact is a *sufficient reason* to gather as much information as possible about this kind of phenomena and to try to understand what is happening, instead of simply denying its possibility. When a platform remains (nearly) stationary above the ground in a vertical position, as for the observation of Mrs. MARITS at ERNAGE, the force developed by this system has to be (nearly) parallel to the platform, to compensate the gravitational attraction towards the centre of the Earth.

The maneuver of the UAP observed by AA and his wife at point C is compatible with the usual laws of physics, but **requires an unconventional method to develop the propulsion force**. It has to account for the centripetal acceleration (v^2/r) and for the over-compensation of gravity, which is necessary to allow for a rising motion. The analogy with a helicopter fails, since this object had no upper and tail rotors. The great banking angle was not strictly necessary if the propulsion force could have any direction with respect to the platform. This means that **the banking could have been chosen to**

impress the witnesses, as this was also the case for Mrs. Marits. The two gendarmes of Eupen saw a rotation of 180° without any curve and without banking.

Wim van UTRECHT (WvU) defends the helicopter hypothesis⁹, but he doesn't care to prove that helicopters could physically perform the maneuver observed at ERNAGE. He simply provides pictures, extracted from a movie that was realized by computer animations, but *fiction shouldn't be confused with reality*. Today, we can also find, even on Internet, some videos of very astonishing helicopter acrobatics, but this doesn't change the fact that physical laws will impose limitations. Certain maneuvers require sufficient velocity (and thus enough kinetic energy or potential energy) to produce the required lift. Reduced mass and a powerful engine will help. Since 2006, it is possible to produce mechanically resistant and yet very light and powerful helicopters. This is true for the EC145 *Eurocopter*, equipped with the 5-bladed *Advanced Technology Rotor* (ATR), without hinges or bearings. This leads also to a much lower noise level, since the transmission of vibrations to the airframe are reduced. Former models (like the BO105, BK117 and EC135) had already impressive capabilities, but the EC145 displays even better performances. However, these helicopters didn't exist in 1989.

General De Brouwer concludes from his personal experience, professional expertise and consultation of other experts that “**at low altitude** (about 20 m) **and very low speed** (about 13 km/h), medium size helicopters such as **SE-330 Pumas cannot perform turns with a considerable bank** (60° of more), such as described by Colonel Amond.”

6. Summary and conclusions

The following table presents an overview of different reasons that exclude various types of conventional hypotheses that might be proposed to explain the observations made at Ernage on December 11, 1989. A cross means exclusion. The reasons correspond to actually observed facts.

Hypothesis and Reason	Fixed wings	Stealth & AWACS	V/STOL	Helicopter	Dirigible & blimp	RPV ULM
No Flight plan	x	x	x	x	x	
No radar detection	x	x	x	x		x
Very low speed	x	x				
No noise	x	x	x	x		
Grand maneuver	x	x		x	x	x
Different lights	x	x		x	x	x
Acceleration	x	x		x	x	x

The so-called skeptics stick to the belief that nothing which is not familiar and already understood could ever happen, so that during the Belgian wave, this country should have been invaded by helicopters, although they can't prove it. It is definitely excluded, however, that the events observed at Ernage and elsewhere during the Belgian wave can simply be explained in terms of helicopters or other types of conventional aircraft.

Chapter IV. Important Scientific Problems and Conclusion

1. Invisibility of material objects

The observations made at ERNAGE on December 11, 1989 were very remarkable for several reasons, but the most significant one is that *the object was invisible*. It displayed luminous panels, a large white light at its front side, three white lights and a pulsating red light on its ventral side, but the surface of the object didn't reflect or scatter Moon light. Even the outlines couldn't be perceived, although there had to be a material object, at close range. This applies as well to the observation of Mrs. MARITS as to those of Colonel AMOND and his wife.

The facts are undisputable, if one is realistic, but they are *paradoxical*, since the flying object applied an unfamiliar technique to achieve efficient optical camouflage, but also made its presence detectable by ostensibly displaying visible lights. At first sight, this makes no sense, but we have to situate this particular fact within an ensemble of related facts. The platforms of the Belgian wave flew often very slowly at low altitude over streets, villages and towns where they could easily be observed by numerous witnesses. They acted as if they *wanted to attract attention*. Nevertheless, their behavior was *evasive*. AM devoted much time and effort to study what appeared on civilian and military radars during the Belgian wave. This study demonstrated with unprecedented certainty¹⁴ that the flying platforms of the Belgian wave were *nearly undetectable by radars*. There were only two exceptions. One of them occurred during the famous flight of the F-16 jets during the night of March 30/31, 1990.

The great triangular platform that had been discovered and observed nearly continuously during two hours by the gendarmes VON MONTIGNY and NICOLL on November 29, 1989 flew over the town hall of EUPEN. It was observed by other witnesses and it stayed during about one hour over the illuminated tower at the Gileppe barrage, where it performed a show with light beams and light balls. This makes sense, when it is interpreted as *an attempt of some intelligence to catch our attention, without imposing itself*. Things are happening since many years and all over the world, as if this intelligence would ask us: *are you not yet ready to open your eyes and your mind* to find out what really happens and to try to understand it?

Complete camouflage, without allowing us to detect at least something, would be useless in this regard. As far as we know, the events of ERNAGE are unique, but there are similar facts. Here is a case of a flying object that was *optically invisible, but detected by radar*. A reliable German journalist told AM in May 2005 that he had interviewed a pilot, who repeatedly made a very strange encounter with an Unidentified Flying Object in the beginning of the seventies. AM interviewed this pilot by phone to get first-hand information. The pilot was flying an F-104 jet. This so-called *starfighter* could reach a velocity of 2.2 Mach. His mission consisted in interception exercises, which normally call for another jet of the same type, but on this particular day, the other plane couldn't fly for technical reasons. Nevertheless, the pilot we mentioned was told to take-off and to make interceptions of other military aircraft under ground radar guidance. The weather was perfectly clear: not the slightest cloud and visibility beyond 25 or 30 nautical miles (NM). What happened?

While flying at 25000 feet and Mach 0.9, the pilot notices on the head-up display of his radar system that there is a "target" at 39 NM. The ground radar doesn't detect it, but gives permission to approach and see what it is. Before that, he had made already two interceptions of targets that the ground radar detected very well. With his airborne radar, the pilot makes then a *lock-on* on the chosen target. The "closing speed" is rapidly increasing, although the other craft is also flying at near the velocity of

sound. It should be a jet. At a distance of about 10 NM, the pilot looks out, but *doesn't see* this aircraft. At 5 NM, he wonders why he doesn't perceive it, although the radar echo is steadily approaching. At 2 NM, *he deviates* in the usual way, to avoid frontal collision. Since the antenna scans the sky in the forward direction without any result, the flying object had to pass by. The pilot turns around, to verify. It's not a U turn with respect to his initial course, but a 210° turn, since he deviated from the straight line that had connected his jet to the other craft. The other jet appears again, now at 15-18 NM. It had continued straight ahead. The closing speed is negative.

Since the pilot of the F-104 had not succeeded in identifying this "jet", he makes *a new lock-on*. The target deviates then from its course and the closing speed becomes positive. The pilot acts as he did the first time, but he is *again unable to see* the approaching object. At 2 NM he gets out of its way. During a short time, he is in doubt, since the ground radar didn't detect the other object. Thus, he wants to find out if the radar system of his starfighter is functioning as it should. He makes again a 210° turn and everything happens exactly as before. The new lock-on and the behavior of the radar system are absolutely normal. He is closing in, but *perceives no object*, although it should be visible, because of scattered Sun light and contrast with respect to the luminous background of the sky. At 2 NM he deviates again, according to normal rules. *The radar is not to blame*.

After this third attempt the pilot gets furious: *"That's not possible. I don't see this target, but it's there on my radar!"* He starts the forth interception, being determined not to deviate anymore. *"He is playing games with me. I will show him. The first one who is deviating will have lost!"* The starfighter pilot *stays on collision course*. He tells AM: *"It was like a confrontation between pilots. Actually, what I wanted was a perceptible reaction from my opponent."* There was no collision, but on his scope, the pilot saw that the target deviated at 1 NM, although *he still didn't see* this craft.

The F-104 turns again. This time the closing speed remains negative. The target continues straight ahead. It disappears already from the screen at a distance of 20 NM, but this depends on the radar cross section. All subsequent interception exercises were absolutely normal. AM asked the pilot if he had written a report. He said: *"no, but this is deeply burnt in my memory. I never heard other pilots speak about a similar experience, but if this happened, they wouldn't mention it."* The pilot who told this to AM retired from active service in the eighties, but he still insisted on absolute anonymity. Even in 2005, he was still afraid of possible negative responses of the establishment.

We have here a trustworthy report concerning a flying object of unknown origin that was detected by the airborne radar, but not by ground radar and that was even *optically invisible*. Stealth capabilities with respect to radar detection belong to our military arsenal. This technology calls for specific geometrical configurations and absorbing power of the surfaces, but optical invisibility is still one of the great challenges of present day military research¹⁵. For light waves, Veselago¹⁶ proposed already in 1964 that special materials could artificially be produced, so that their index of refraction is negative. Light that penetrates into such a substance will be refracted towards the rear. Two different versions of such *metamaterials* were recently produced by Xiang Zhang and his collaborators¹⁷. It is believed that these materials could constitute *invisibility cloaks*, by curving light waves around the object like a river flowing around a rock.

In this context, we have to mention there are some baffling observations concerning UAPs. "We still must explain how tangible hardware can *change shape* before our eyes, *vanish* in a Cheshire cat manner (not even leaving a grin), seemingly melt away in front of us, or apparently *materialize* before us without apparent detection by persons nearby¹⁸." This looks like *a modification of the propagation of light waves* and there are some peculiar observations, which indicate that this does not depend on

the surface materials, but rather on *a deliberate change of the optical properties of the ambient medium*. Observations of this kind are rarely reported for two reasons. This seems too unbelievable and could thus have a negative impact on the credibility of the witnesses and the whole phenomenon. Moreover, a partial detection is paradoxical, unless it results from an intention, as we mentioned already. The observations of Mrs. Marits, Colonel Amond and his wife in Ernage, on December 11, 1989 and the repeated observations of the starfighter pilot we mentioned, do call for more attention to this regard. We don't know if the purpose is to stimulate our curiosity or to test our reactions, but we should try to get also more information about this aspect of the general problem.

2. Another assumed helicopter case

Lecllet's text was introduced (after his death) by a case that seemed to justify the helicopter hypothesis. It concerns the observations made at PLANCENOIT, on **October 4, 1992**. Let's start with the facts¹⁹. They were presented in Inforespace and VOB2, but these accounts were themselves based on a 21 page report, including a 2 page letter of the principal witness. He wrote it already on October 9, 1992, to inform SOBEPS, and both witnesses were interviewed on February 3, 1993. We integrate all available information, but give priority to the initial letter of the principal witness (PC). Here are the facts, as they were reported.

On Sunday October 4, at about **18:45** local time, Mr. and Mrs. C are in their car on the N271, leading from Lasne to Plancenoit, near Waterloo. They have passed Maransart. The Sun has set, but it is still clear and the sky has a beautiful color. The Moon is visible as a crescent, but slightly veiled. The main witness (PC) is driving at 40-50 km/h and admires with his wife the beautiful scene. He also notices a plane, clearly identifiable, because of sharp outlines and clearly visible blinking position lights. Then, when he arrives at A on figure 24, his attention is caught by *a big luminous spot* in the sky, just in front of him. It is rather yellow, very brilliant and sharply defined. It has no apparent motion, but can't be a star, since it is too big for that and stars are not yet visible.

PC asks himself if this could be an aircraft that is approaching along the axis of the street, but he doesn't see any position lights. Then he thinks "*I will see what it is, when I get closer.*" When he arrives at the point B, he decides thus not to follow his usual route on the right side. He continues straight ahead and tells his wife, who had been looking elsewhere, why he does this.

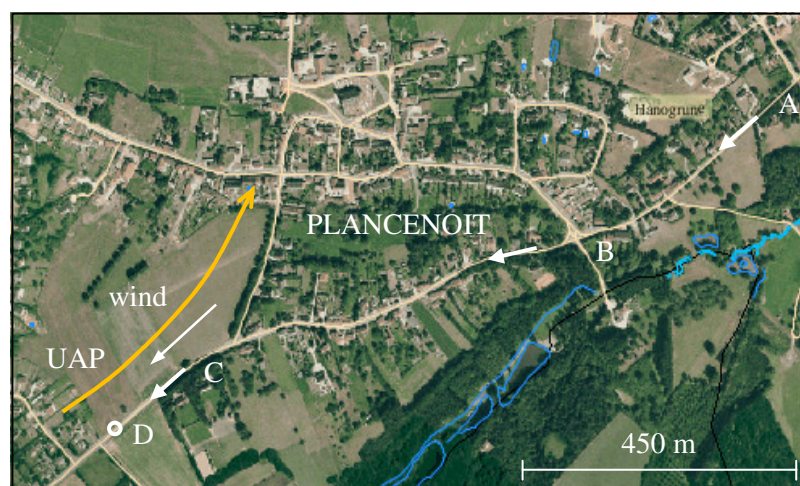


Figure 24: Observation site at Plancenoit near Waterloo.

If it was an aircraft, it had to fly at low altitude, since now they can't see it from the mounting street. When they arrive at the top of the hill, it reappears as *a very brilliant and sharply defined light*, but it is now seen from the side. The light belongs to a larger, elongated structure. PC writes: "at first sight, I thought it was a plane. It had the same general form, and if you wanted, *you might guess* the presence of a tail and wing-flaps, but *the form was fuzzy* and rather gray".

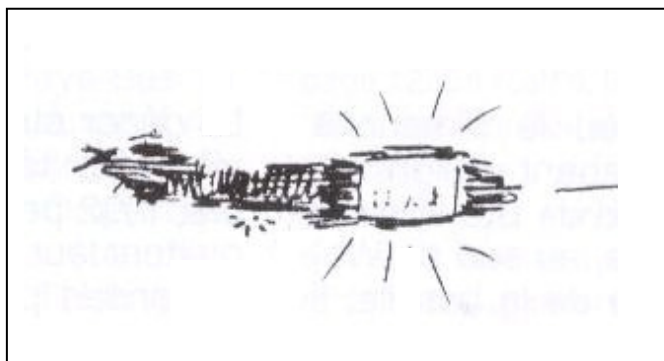


Figure 25: Drawing of the fuzzy flying object.

PC, who is a painter, made a drawing (figure 25). It might suggest, indeed, that he and his wife simply saw a helicopter, but Mrs. C compared the structure to the arm of a crane. According to PC's letter, "the object was flying at our right, parallel to the street where we were on. The *slowness of its motion* did immediately strike me. Its size is rather important, but I can't evaluate the distance." PC is also intrigued by the appearance of the flying object.

His wife asks him to *stop the car*. They are now at D (figure 24) and trying to find out what it could be. She opens the window, but they *don't hear any sound*. PC is astonished by the fact that "the light is coming from a large bay-window that occupies the largest part of the side of the body of this object. *This light is yellow and vivid.*" He adds in his letter: "I tried to distinguish position light, but I saw nothing that could resemble the classical position lights of a plane. I vaguely saw *a weak, slowly blinking red light* under the machine."

After about 30 seconds, the object disappears behind trees and houses. PC doesn't follow it, since they are expected at the home of friends. The whole observation (from A to the departure of the object, observed at D) lasted about 3 minutes. PC notes that while driving to Waterloo, "we had the opportunity to compare what we saw with every day's banalities. The planes were moving at a higher velocity. Their outlines were sharp and the position lights were clearly defined." This is not the behavior of fantasy prone personalities, postulated by Jean-Michel ABRASSART to "explain" the Belgian wave. It is the rational procedure of someone who is self-critical and wants to verify.

The interview of both witnesses, conducted by Claire HAUZEUR, disclosed additional information. The apparent size of the *initially* seen light was comparable to the full Moon: 0.5° . When he saw the light again, PC inclined his body towards the right window to catch every detail. He drove thus more slowly. His wife observed now also, but for their security, she asked to stop at the side of the road and rolled then her window down. The object was slowly moving at an angular elevation of about 30° . The *angular length* of the object is now 7 - 10 cm at arm's length, or *5 to 8*. The large luminous "bay-window" is a rectangle with a curved lower boundary.

PC is not only painter, but studied biology, and thus accustomed to careful observations. When Mrs. Hauzeur asks him, if he could draw the outlines more clearly that he did in his letter for SO-BEPS, he says no. He couldn't, since only the "bay-window" was sharply defined. The contours were not clearly recognizable, *as if surrounded by some kind of mist*. Both witnesses are unanimous in regard to this fact, which reminds us of the observations made at ERNAGE. Mrs. C is slightly short-sighted and didn't wear her spectacles, but she saw very well what she described as a "hole" in a grayish and not sharply outlined structure. To avoid misunderstandings, we repeat that the outlines of planes were not blurred by some hypothetical local mist.

PC tried to suggest in his drawing that he had the impression that he could perceive a "presence". He confides to the investigator that he felt at first somewhat *uneasy or even anxious*. This means that he had abandoned the idea of a conventional aircraft. Being an artist, he had previously been preoccupied in his dreams by the UFO phenomenon and eventual visits of aliens. He felt now reassured: "*it's only that*". He didn't even turn around to continue his observations, although that would have been

possible. They were expected by friends, but later on, he regretted that he did not follow this flying object. It continued to move very slowly on a curved path, until it disappeared behind houses. The trajectory of figure 24 corresponds to the drawing of PC.

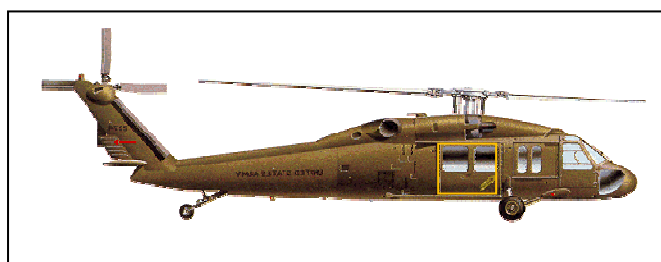


Figure 26: The US “Black Hawk” transport helicopter.

Wim VAN UTRECHT (WvU) did introduce Leclet’s text, by comparing the drawing 25 with pictures of the **Black Hawk helicopter**. Its form is roughly similar, but closer inspection reveals significant differences. The door (added frame in figure 26) doesn’t have the same shape and relative size. The general outline and the rotor blades are clearly visible.

At dusk, the obligatory position lights would also be perceptible. If the UAP had been this helicopter, its length would be close to 20 m (actually 19.76 m). An apparent length of 5 - 8° would thus imply **a distance between 230 and 140 m**. Nevertheless, WvU seems to believe that it is possible that the witnesses didn’t hear any noise coming from the assumed transport helicopter. It is very noisy when flying at low velocity and low altitude, since it has two TE-700 GE turbines, each one of 1580 HP. WvU tries to explain that the witnesses didn’t hear any sound (p.2): “Every one of us has had the opportunity, during his life, to realize that *a week wind blowing in the opposite direction* is sometimes enough for weakening or even masking completely a loud noise. Now, on that day, there was **a violent wind**, clearly specified at the very beginning of the (SOBEPS) report”.

We consulted the data sheets of the RMI in Uccle. The prevision for October 4, 1992 was: “Sunny but windy weather... Moderate or rather strong wind, but very strong at the coast from the NE.” The wind was also blowing at Uccle (only about 18 km from Plancenoit) from the NE, as well in the evening than in the morning of October 4. This is precisely **the opposite** of WvU’s expectations. Figure 25 shows even that the UAP passed at less than 100 m from the witnesses when their car was parked at D with an open window. The wind would have been favorable to better hearing.

It should be noted that WvU accuses SOBEPS¹⁰ (p.2-3), since “*without the least hesitation*, the investigator and the editors built a beautiful UFO case. We however have only to look at the picture [figure 25] with some hindsight to realize that it obviously represents a helicopter.” The whole text of RL aims at showing that the observations of the Belgian wave could be explained in a conventional way. LECLET proclaims (p.1): “*I shall show that most of them probably are only mistakes generated by military helicopters.*” WvU adds (p.2): “This happens since SOBEPS people are deeply convinced, from the beginning, that they are faced with UFOs and because they examine and process the facts one-sidedly.” He is thinks that the “*witness probably saw a **Black Hawk helicopter***” (p.3).

This American Utility Tactical Transport Aircraft System (UTTAS) UH-60 has a very great door, indeed, to jump rapidly to the ground, but why should this door be open in windy weather? Why should the cargo room be brightly illuminated, and not the other windows? Why did PC draw a proportionately greater door, having a different shape? Why did he and his wife not clearly see the fuselage, the 4 long rotor blades at less than 200 m and why did they not even perceive the regular anti-collision and position lights? Why should such an American helicopter be flying at very low altitude at Plancenoit on a curved path? Why should it fly so slowly, with increased gasoline consumption? All these questions have not been answered and were not even raised, but WvU tried to explain why a great US military helicopter might have been present. Unfortunately, his theory is insufficient.

In a Flemish journal, which identifies WvU, he found the following news: “End of September - beginning October 1992, **important military maneuvers** took place in the Belgian Ardennes. It was a joint German, Belgian, British and French operation called *Autumn Leave*. It required the deployment of 6000 men and *a multinational airborne division using big helicopters for quickly carrying units from one place to another.*” We verified. Another newspaper²⁰ did also announce that maneuvers would take place *from September 17 to October 2*, but besides Belgian troops, there would only be 400 English, 80 French and 500 German soldiers. That’s very modest for an ‘important military maneuver’. Colonel AMOND had the best possible contacts for further checking.

We got access to the whole dossier (figure 27). The essential point is that it was only a **CPX** (Commando Post Exercise). It concerns “the commander, his staff and communications within and between participating head-quarters.” In contrast to an **FTX** (Field Training Exercise), it involves no troops and no heavy material! In other words, it is *a maneuver on paper*, a simulation, although it requires a sufficiently large area, at the level of the General Quarter of an Army Corps (1BE). This area is graphically defined on figure 27. Plancenoit and Elsenborn were not included.

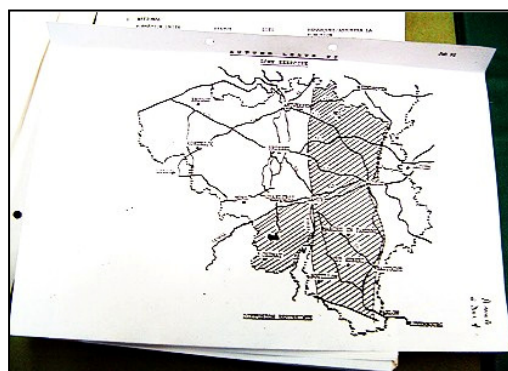


Figure 27: Region covered by the CPX

The only foreign unities that participated were the 24 (UK) Amob Bde Cel and the 32 (GE) PzGrBde (Panzergrenadierbrigade) Cel. No Americans and thus no US Black Hawk Helicopters. On October 4, 1992, thus after this CPX, there was no international maneuver in Elsenborn, since this camp has other functions and couldn’t accommodate an international maneuver. This case proves - in an exemplary way - that those who are attacking other persons, by accusing them to **believe without verification**, do themselves exactly what they detest so much. They overlooked the fact that the Belgian Air Force and SOBEPS had enough arguments to realize that the flying objects of the Belgian wave couldn’t be helicopters or some other conventional aircraft. This didn’t require all the time and effort that they would like to impose for tactical reasons, being short of better arguments. Nevertheless, it seemed useful to respond to their demand to help them and others to realize that the real problem is more serious and profound than they thought, so far.

Why did we place this particular case in this chapter? The answer is straightforward, since the behavior that we are uncovering does strongly contribute to the difficulty of becoming aware of the basic problem and solving it in a normal rational way. Scientists are dissuaded to get involved in this subject and even the witnesses will shy away from telling what they saw. That is in itself an important scientific problem. **Socio-psychologists, as well as philosophers and historians of science** should try to unravel the underlying motivations. They are related to the fact that some individuals and human groups tend to strongly resist changes of their basic ideas. Galileo was not simply condemned for religious reasons. The dominant ideas at that time were those of Aristotelian physics, where the center of the Earth was assumed to be the centre of the Universe, which seemed to be a finite, spherical one. Newton, Einstein and many others, who brought changes, encountered great difficulties. It required the whole 19th century to make the concept of atoms acceptable, in spite of steadily accumulating facts and arguments. Resistance to changes of paradigm is only good up to a certain point.

To be critical with respect to facts that disturb customary ideas is normal and understandable, but for the problem we are discussing here, the basic idea which is at stake is the old belief that we are the only intelligent beings in our Universe. More and more arguments are progressively accumulated to

suggest the same universal constituents and universal laws could allow for similar evolutions at different places, but it is then objected that even if intelligent beings did exist somewhere, they couldn't realize interstellar space travel, at least not as easily as suggested by observations. How do we know? We can only assert that our present scientific knowledge and technical know-how doesn't allow us to understand how this could be achieved. The conclusion should be to make a dedicated effort to collect more and better data, to analyze and to try to understand it, *without any kind of preconceptions or beliefs*. This can be done on the basis of observations that were made and are possible near the surface of the Earth. The "extraterrestrial hypothesis" can neither be confirmed nor excluded, if we don't care to study what would cost much less than many other scientific programs.

3. The Propulsion Problem

The observations made at ERNAGE and PLANCENOIT are only two particular cases of a huge number of observations of a very specific type. It is necessary to be aware of this ensemble, to raise the appropriate basic questions. We can speak of *Unidentified Aerial phenomena*, but they are different from Ball Lightning phenomena, for instance, which are natural phenomena, although they are not yet explained and also occur in the low terrestrial atmosphere. We are confronted with *Unconventional Flying Objects of unknown Origin*. At the present stage, the origin is less important than the fact that these objects involve *a technology of an unfamiliar type*. The helicopter hypothesis shows that even skeptics accept the idea of "flying objects", but they assume that it should be conventional ones. Is this absolutely necessary when we examine the facts in a strictly rational way?

It has occasionally been observed that these Unconventional Flying Objects did enter or come out of oceans or other large water masses. Moreover, we learned through the observations that were considered in this study that these objects don't have wings, allowing for aerodynamic lift, and they don't insure their propulsion by means of propellers, rotors or reactors. That's a general characteristic of this kind of objects. They use *an innovative propulsion system*. It's not simply an application of the laws of aerodynamics and hydrodynamics, where one considers variable velocities and variable pressures in a fluid of given density. Could this be an occasion to learn something new?

As a physicist, AM got interested in this problem at the beginning of the seventies²¹. On one hand, it was already necessary to make sense of a huge number of observations. On the other hand, it should be possible to explain at least a part of the observed facts in terms of known physical laws. Even if extraterrestrial science and technology were involved, *it has to apply those laws that we know already*. This means that we don't have to know the origin of these flying objects to think about some essential features of the global phenomenon according to usual theoretical rules. It is customary in science, to advance step by step. Today, we know for instance that about 95% of the matter which is present in our Universe is "*dark matter*". It should be constituted of electrically neutral particles that have mass and allow thus for gravitational interactions, but not for the emission, absorption or scattering of photons. We ignore their true nature of these particles, since we were not yet able to produce them and to analyze their properties in our laboratories, but that's no reason for resignation or to ridicule this subject. Normal scientific curiosity is sufficient to proceed.

Unconventional flying objects are different from familiar flying objects, but their sustentation and propulsion has to result from some kind of forces. Since all active propulsion systems are based on the *principle of action and reaction*, which is a fundamental law of mechanics. It tells us that when we apply a force on something else, we are subjected ourselves to a "reaction force" that has the same magnitude, but the opposite orientation. When we are swimming, for instance, we act on the surrounding medium, but this allows us to advance with respect to this medium and thus to get propelled. Our

problem can thus be reformulated: *what kind of forces* could be applied on air and water, besides the usual mechanical ones? There are hints, since the air in the immediate vicinity of classical “flying saucers” was often observed to be luminous. Sometimes it was even observed that the intensity and color of the emitted light did change when the object was accelerated. This could indicate that the ambient air was ionized, to *create charged particles that can be subjected to electric and magnetic forces*. The heart of the matter consists then in a study of the effects of an electric field $\mathbf{E}$ and a magnetic field $\mathbf{B}$ on a particle of charge q and mass m . We have to apply Newton’s law of motion:

$$m \dot{\mathbf{v}} = q \mathbf{E} + q (\mathbf{v} \times \mathbf{B}) - (m/\tau) \mathbf{v}$$

The first member is mass, times acceleration (or temporal change of the instantaneous velocity $\mathbf{v}$, indicated by a dot). The first term of the second member defines the electric force and the second one the magnetic force. It depends on the *vector product* of the velocity $\mathbf{v}$ and the magnetic field $\mathbf{B}$. Vectors are indicated in bold letters. The last term defines the frictional force, resulting from collisions with other particles. The predominant collisions are “elastic” ones, indeed. They change the direction of motion of the particle, but not its energy. The resulting average effect is equivalent to the application of *force of viscous friction*. It is proportional to the magnitude of the velocity $\mathbf{v}$, but opposite. The relaxation time τ gets smaller for frequent collisions.

We have now to consider what happens *when a charged particle is suddenly created* (by ionization of the ambient fluid) with nearly zero velocity in given electric and magnetic fields. Before it disappears by recombination processes, it will be subjected to the forces we have defined. At first, it will be accelerated by the electric field $\mathbf{E}$, but as soon as it acquires velocity, it will also be pushed in a transverse direction by the magnetic field $\mathbf{B}$. The particle will tend to follow a circular path, as in any cyclotron, but the radius of curvature is very small when the magnetic field is very intense. Moreover, we have to take into account the frictional force, which tends to reduce the velocity. The result is a compromise: *a spiraling motion* that ends up, after the time τ , with a steady velocity $\mathbf{v}$. It defines the *average velocity* during the whole time interval where the particle does exist.

Since the average acceleration is zero, the average velocity is defined by the condition that the first member of the equation of motion is zero. The average frictional force is thus compensated by *the applied electromagnetic force*, which is the sum of the two first terms of the second member of the law of motion. The object, which is the source of the electromagnetic field acts on the particle, which acts itself on *other particles*. This yields *a reaction force*, which is simply defined by the applied EM field and the average velocity, depending on the ambient medium. The charged particles have to be created by an ionization pulse, but the initiating agent doesn’t have to be very intense, since the accelerated charged particles, created by sufficiently strong fields, will produce *an avalanche effect*.

The number of charged particles inside the plasma is automatically increased, as this happens also in any electrical discharge. Moreover, since high energy charged particles will ionize neutral particles, the ambient air will not necessarily be set in motion at a macroscopic scale, to produce a strong wind as this happens for helicopters, for instance. Nevertheless, there are cases where wind has been observed, as well as actions on vegetation or water surfaces. These observations confirm the validity of the proposed model. Such a system has the advantage that *we can use an oscillating EM field, when the ionization is adequately pulsed*. The orientation of the locally applied EM forces can then easily be reversed, by ionizing at different moments. Only the phase of the pulsed ionization has thus to be modified to get *cooperating forces* above and below, as well as in front and behind the flying object. The orientation of the global resulting force can also be modified, by changing the spatial distribution

of the pulsed ionization around the flying object. This yields a new propulsion system. Instead of chemical explosions and aerodynamic forces, we get ***Pulsed EM Propulsion*** (PEMP).

Are there observed facts that corroborate this picture? It happened quite often that classical, disc-like objects produced so-called “*electromagnetic effects*.” Car engines and car lights were specifically involved, but it is much more interesting that magnetic compass needles were set in rotation in the vicinity of UFOs and that this has been observed in particular by pilots. That’s astonishing, since the spatial variation of oscillating magnetic field produced by an unconventional flying object for its propulsion is expected to be negligible at the scale of a magnetic compass. However, it was possible to reproduce the phenomenon of ***rotating compass needles*** in the laboratory, to set up equations for computer simulations and to analyze this effect in detail²². This method allowed us to establish that ***unconventional flying objects produce a low frequency, but very intense oscillating magnetic field***.

Other interesting developments became then possible in regard to the mechanism, which allows for the production of EM fields that are only intense in the immediate vicinity of the object, although they are oscillating. The flexibility of the resulting propulsion force is illustrated, for instance, by those cases where the flying objects remained suspended or were moving with ***oscillatory motions***. They imply that the propulsion force can be modulated by adding an oscillating transverse force to the vertical force, compensating the inevitable gravitational force²³. That’s enough to show that a physical study of unconventional flying object is at least as interesting as observations and reflections about flying birds, which preceded the development of aviation.

Conclusions

The UAPs, so frequently observed during the Belgian wave ***can’t be explained in terms of helicopters or other conventional aircraft***. The so-called skeptics who propose this kind of hypotheses and propagate the rumor of simple perceptual errors or misinterpretations are not skeptical enough to be self-critical. Their incentives are ideological and their methods are not rational.

The observations made at ***Ernage and Plancenoit***, respectively on December 11, 1989 and October 4, 1992, provide evidence for the occasional appearance of ***unconventional flying objects of unknown origin***, although Leclercq and his collaborators tried to suggest the contrary. It was necessary, however, to look at these observations more closely than they did.

This process was itself very interesting and surprising. The greatest difficulty resulted from the fact much time had passed since these observations were made. Another difficulty was that sometimes, it was necessary to ***combine various parameters through a set of relations***, but this allowed us to test the logical consistency of the data and to make apparent what was initially hidden. Basically, we learned more about ***characteristic properties*** of unconventional flying objects.

At PLANCENOIT, the flying object displayed a great yellow light with sharply defined boundaries, while the structure of the object was ***fuzzy***. At ERNAGE, there appeared several well-defined lights, but the surface and outlines of the object were ***invisible***, although it could be observed at close range. To our knowledge this a feature that has not yet attracted sufficient attention, but clearly shows that we can learn something new and start to think about it in scientific terms. The ***paradox***, which results from the fact that some aspects were easily observable, while other aspects were more or less hidden, can also be considered as an invitation to more curiosity and thoughtfulness.

We have then to face the possibility that *some kind of intelligence* is directly and indirectly involved. This was the spontaneous impression of Colonel Amond, although he had no preliminary knowledge at all about UFOs and their manifestations. It resulted from the very peculiar behavior of the observed object. A closer analysis of technical details confirmed this idea. Such a technology had to be conceived somewhere. The objects had to be constructed and remotely controlled or piloted in such a way that adaptive and immediate reactions were possible

The most important conclusion in our view is that a rational approach of the problem of Unidentified Aerial Phenomena is possible and useful. *A scientific study of the observed facts and the propulsion system is recommended.* The only real risk is that we might learn something new, but that is the normal situation in science. Curiosity constituted the internal spring that led to the development of humanity. We don't have to speculate about the origin of these objects, but should concentrate on observed properties and their implications.

One of them is that there has to exist *an energy source that we don't know*. This is an absolutely necessary when interstellar voyages are required, but this is already obvious when we consider only what has been observed near the surface of the Earth. Why should it be uninteresting to try to find out what might provide this energy? Every human who is ready to use his potential of curiosity and rational thinking is challenged by these facts and *has a responsibility* to further this kind of research. It is true that *extraordinary claims require extraordinary proof*, but the assertion that nothing special did ever happen is also becoming an extraordinary claim that requires extraordinary proof.

Appendix 1: Letter of LtCol Amond to the MND

"This statement is based on a number of observations made on 11 December 1989 at approximately 18 h 45, while I was driving to the railway station of Gembloux, coming from Ernage where I reside. My spouse Chantal was with me and made the same observations. It was dark, the sky was full of stars and there was full moon.

Close to the Sart Ernage farm, I saw in the sky at my right three to four light panels at the height of the last third of the row of trees behind the farm of Sart Ernage, moving more or less in a North-South direction, coming from the radar tower of Mellery, overhead the villages of Cortil or Saint-Géry, proceeding towards Corroy. The panels are of trapezoidal form [figure 3a]. The size of these light panels does not vary and they are not at all dancing around. Under this series of panels, more or less in the centre, a kind of blinking red light is installed, but it is absolutely not similar to the blinking red lights that are placed on normal aircraft, which flicker like stars. The estimated altitude of this series of light panels is 200 to 300 meters.

The road where I am driving turns to the left at the Sart Ernage farm and leads to Gembloux. The light panels of the object follow this general direction. Driving at a speed of 50-60 km/h, the light panels drop behind. To continue my observation, I stop at the highest point of this country road, situated directly beyond the Sart Ernage farm. My spouse lowers the car window. The UAP, which moves slowly at my right, overtakes me and continues in the same direction. This part of the observation took approximately 2 to 4 minutes

Then the UAP suddenly turned into our direction. Only one enormous white headlight, much larger than any light of a large transport aircraft, is visible. I feel now a certain apprehension. My wife is

scared and asks me to leave, because of the new direction taken by the object, which shows itself, with its enormous luminous mass, as being somewhat aggressive, especially since we didn't hear any engine noise... This craft was silent!

At the moment that the car was about to leave, the large headlight disappears and three white spot lights appear. They are smaller than the previous light and they form a more or less equilateral triangle. In the centre of gravity of this triangle, there is again the red revolving [actually pulsating] light, now seen in front view. Obviously, the object makes a left turn of 180^0 . The distance between the white light spots is estimated at approximately 10 meters. It seems paradoxical to me at this moment, that in spite of the moonlight, which makes it possible to see the landscape, we don't see any mass around the lights that constitute the triangle.

The UAP's maneuver is majestic and slow. The turn is tight, so tight that it is not necessary to move the head or the eyes to observe the UAP making its turn, like one does to follow the displacement of a Boeing or similar aircraft.

Subsequently, the light spots disappear, only the revolving red light is still visible from the side. Very quickly, this light disappears in the darkness of the night in a SSW direction. The duration of the observation is estimated at 5 to 8 minutes. [Some comments on two other figures are given].

Four characteristics impressed me: (1) the slow movement of the object as opposed to its speed at the end of the observation; (2) the mass, which had necessarily to be distributed around the lights, did not reflect the moonlight at all and was not visible; (3) the absence of any engine noise, it was too silent; and finally (4) the creation of apprehension and fear, in particular with my wife, because of this silence and the enormous headlight, situated in the front of the object that was aiming towards us."

Appendix 2: Published oral statements of LtCol Amond

"The observation lasted several minutes during which I couldn't hear any noise, even when paying special attention. The moon was at the other side of the observation and should have lit the object; yet I didn't perceive any reflection and I didn't get any impression of a [supporting] mass.

When the UAP passed in front of the wood, it changed its course - I don't remember how- and a very bright headlight (2 x the diameter of the moon) was then directed towards us. Its intensity increased and the light was [now] lower than the tops of the trees [in the background]. My wife was scared and begged me to start the car. I felt myself a certain anxiety because, in my judgment, I was confronted with a rather aggressive behavior.

The car started without any problem. It was then that the UAP made a banking maneuver and that I saw three white lights in a triangular disposition, in an oblique climb to the right, the strongest light being directed towards the sky. The [pulsating] red light was in the middle of the triangle [formed by the white lights]. Its apparent [angular] diameter was two to three times larger than that of the two lights at the base of the triangle, while the upper light was three to four times more intense than the two other lights. Dimensions: between 6 and 10 meters between the spotlights [forming a triangle].

The UAP settled with the red light underneath and disappeared quickly (10 sec) in a southern direction. I went to pick up my son at the railway station; we were back home at 19 h 05. The next day, I filmed the moon with my video camera to verify its functioning in the dark and I went the following

evenings to the same place. In vain, [since the phenomenon, I never heard of, didn't reappear]. After some hesitation - fear of the ridicule - I sent a letter to the Cabinet of the Minister of National Defense to report the events. For me, it was clear; this was no AWACS, no ULM, no helicopter and no hologram."

¹ SOBEPS: Vague d'OVNI sur la Belgique Un dossier exceptionnel (VOB1) 1991. Vague d'OVNI sur la Belgique. Une énigme non résolue (VOB2) 1994.

² National Press Club, Washington DC: Official data on unidentified aerial phenomena, prompting international cooperation on issues of aviation safety and national security pertaining to UAP/UFOs. November 10-12, 2007.

³ cobeps@skynet.be

⁴ Quentin van de Velde : Phénomène OVNI, Autant Savoir, 22 min, RTBF, 1992

⁵ M. Van De Velde; Computer simulation (of the second part of the Ernage sighting), CLAV, RTBF, 1992.

⁶ Jacques Baynac and Philippe Nahoun, Soirée OVNI/UFO, THEMA, 86 min, ARTE, 1996.

⁷ Pierre Istace : Questions à la Une, RTBF, 24.10.2007.

⁸ euroufonet@yahoogroups.com

⁹ W. van Utrecht: Ernage - December 11, 1989: <http://www.caelestia.be/respernage.php?resp=16>

¹⁰ Renaud Leclerc (edited by Eric Maillot, Gilles Munch, Jacques Scornaux and Wim van Utrecht): CNEGU, 2008 .Vague belge: une hypothèse oubliée? <http://gmh.chez-alice.fr/RLT/VOB-RLT-10-2008.pdf>
A neglected hypothesis: <http://gmh.chez-alice.fr/RLT/BUW-RLT-10-2008.pdf>

¹¹ A. Meessen: Les observations décisives du 29 novembre 1989 VOB1, 11-49 (Les gendarmes d'Eupen, 16-24).

¹² A. Meessen: Étude approfondie et discussion de certaines observations du 29 novembre 1989, Inforespace, n° 95, octobre 1997, 16-70. <http://www.meessen.net/AMeessen/Gileppe.pdf>

¹³ A. Meessen : Analyse et implications physiques de deux photos de la vague belge, Inforespace n° 100, 2000, 5-40, <http://www.meessen.net/AMeessen/Photo1/>

¹⁴ A. Meessen: Etude approfondie des mystérieux enregistrements radar des F-16. Inforespace, n°97, décembre 1998, 9-48. <http://www.meessen.net/AMeessen/radarF16.pdf>

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