

Photo analysis

Phoenix lights revisited

By Bruce Maccabee

The evening of Jan. 14, 1998, was just another winter night in most of the U.S., but not in Phoenix, AZ. In Phoenix, it was "deja vue all over again!" Telephones of local press and TV stations began ringing off the hook as numerous witnesses reported bright lights hovering in the sky south of Phoenix. Just as happened about a year before, extremely bright orange-colored lights were appearing, hovering apparently motionless, and then disappearing over the range of mountains named after the stars, the Estrellas.

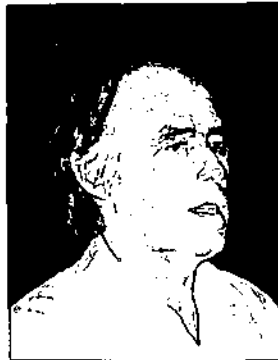
Could it be that ETs were back to once again stick the UFO needle into a reluctant public? Or were these lights merely flares dropped by the Air Force or National Guard during a training session more than 60 miles from Phoenix?

Witnesses said it couldn't be flares. The lights were too bright to be that far away, they were the wrong color (orange instead of white), they didn't drop downward, and they could see no parachutes (that support burning flares) and no smoke plumes. Also, they didn't see or hear any airplanes that could have dropped the flares. These looked like the lights seen during March of the previous year, which they believed were only about 15 to 20 miles southwest of Phoenix.

Reports by the media

The news media dutifully reported the sightings and possible explanations, and then once again the UFO subject faded from public view. But within the community of witnesses and UFO researchers an argument was raging. Were these lights explainable, or weren't they? A long article in the Phoenix *New Times* weekly newspaper for March 5, 1998, discussed the sightings of March 13, 1997, and the reaction to them.

The article, by Tony Ortega, made a mockery of the witnesses and UFO researchers for not accepting the proffered explanations, and was critical of the Air Force for adding to the confusion by not stating immediately, when asked, that the Maryland National Guard had dropped flares over the Barry Goldwater training range at the time of the March, 1997, sightings. The article argued that all the sightings could be explained. The witnesses, however, were not convinced. What was the truth? That is what they wanted to know.



Dr. Bruce Maccabee

About the author

Dr. Maccabee holds the Ph.D. in Physics, and is a research physicist at the Naval Surface Weapons Center in Silver Springs, MD. He is a former member of NICAP, and was one of the founders of the Fund For UFO Research (FUFOR). He has written nearly 100 articles in publications such as the *Journal*, and co-authored the book *UFOs Are Real: Here's the Proof* with Ed Walters.

As far as the general public and the news media are concerned, this all began on March 13, 1997, when numerous witnesses saw, and one person videotaped, a moving V-shaped array of lights that traveled southward over the Phoenix area somewhat after 8 p.m. Some witnesses also reported a large dark triangular object that blocked out the stars as it passed over. Then, about two hours later, some witnesses saw—and several videotaped—an array of lights which appeared one after another in the sky south of Phoenix. The individual bright lights in the array would appear for a minute to several minutes and then fade and go out.

The March 13 sightings have been featured in numerous press accounts and TV documentaries and in two issues of the *MUFON UFO Journal*. The first MUFON report was written by Bill Hamilton and published in May, 1997 (Issue 349). In that paper Hamilton discussed his own sighting as well as the sightings by others during the 10 p.m. event. Hamilton also reported on sightings that began about 8 p.m. and continued for about half an hour or so with the first witnesses near Paulden, AZ, and the last witnesses somewhat south of the Phoenix area and north of Tucson.

Hamilton identified four different events: 1) 8-9 p.m. time frame: the moving, silent V-shaped array of lights; 2) 8-9 p.m. time frame: a large, black, silent, moving, triangular object; 3) 10 p.m.: numerous very bright glowing orange orbs that formed an arc-shaped array in the sky south of Phoenix; and 4) 8-10 p.m.: two orange lights in the sky apparently near Luke AFB (west of Phoenix) reported only by truck driver Bill Greiner, who watched them for about two hours as he drove southward. There was also a report by witnesses traveling northward from Tucson of an object which seemed to travel with them a short distance, suggesting that perhaps the triangle, when just north of Tucson, had reversed direction and headed back toward Phoenix sometime after 9 p.m.

Some confusion

Inevitably the moving triangle and light array events got somewhat mixed up as Hamilton conjectured that "This object returned (to the Phoenix South Mountain area) at close to 10 p.m. that night and de-

ployed 'orbs' in the vicinity of the Estrella Mountain, or appeared as an object in a wide configuration that, from a distance of 25 miles, had the appearance of an arc of ten lights spanning a mile across."

Hamilton further stated that "some mysterious military source suggested that the strange lights over Phoenix were explained as an anti-aircraft experiment in a military operating area over 50 miles from Phoenix. This experiment involved flares descending on parachutes." However, "two witnesses we interviewed were demolition experts for the military, and they stated that what they saw were not flares." The immediate response of the Air Force to press inquiries at Luke AFB in Phoenix and Davis-Monthan AFB near Tucson was that the Air Force had no flare-related operations at the time.

Begins with a bang

Thus the story of the Phoenix lights began with a bang. No one could deny that the witnesses had seen something...the videos were proof, even if the testimony were disputed. The controversy raged for months, and even became politicized as a city councilwoman, Emma Barwood, raised the question, why isn't the government interested in clearing up the confusion over these lights?

Many months later, in late July, the Maryland National Guard announced that it had carried out training maneuvers over the Barry Goldwater Air Force Range on the night of March 13, which included dropping high intensity flares at relatively high altitudes around 15,000 ft. These flares are used for illuminating the ground. The Goldwater Range covers a large area situated from about 50 to well over 100 miles southwest of Phoenix.

A earlier conclusion

Even before the Maryland National Guard announcement, Richard Motzer, MUFON field investigator for Arizona, had reached a conclusion about the light arrays. He published the results of his investigation in the July, 1997, issue of the *MUFON UFO Journal* (#351). His article amplified on Hamilton's and gave his explanation for the 10 p.m. sightings and videos: illumination flares dropped at high altitude by aircraft southwest of the Estrella Range. Motzer pointed out that, in contrast to the numerous reports of Hamilton's event #1 (8-8:30 p.m.), there were few reports of the orange glowing lights in event #3 (10 p.m.). Further, most of those reports in event #3 came from people who lived at considerable altitudes above the level of Phoenix, who therefore could see over the mountains better than the residents at the level of the main city.

These relatively few reports attracted most of the news media interest because several of the wit-

nesses had videotaped the 10 p.m. lights. As is typical of the news media (media in, garble out), the 10 p.m. videos of the stationary lights were mixed up with the verbal descriptions (and one video) of the moving V-shaped array in event 1. The result was that a person watching the TV shows would be confused as to what was actually seen during the 8-8:30 p.m. sightings. (Note: the one video of the V was of short duration and didn't show much detail.)

A triangulation

Motzer used the sighting directions from the various locations of the witnesses to triangulate the glowing orbs. The map he published shows the sighting lines from six different witnesses converging on a point about 22 miles southwest of the point where Interstate 17 crosses Interstate 10 in Phoenix. Several of the witnesses had stated their opinions that the lights were on the north side of the Estrellas, just south of Phoenix. However, Motzer's triangulation clearly showed that the lights were a few miles south of the Estrella Range.

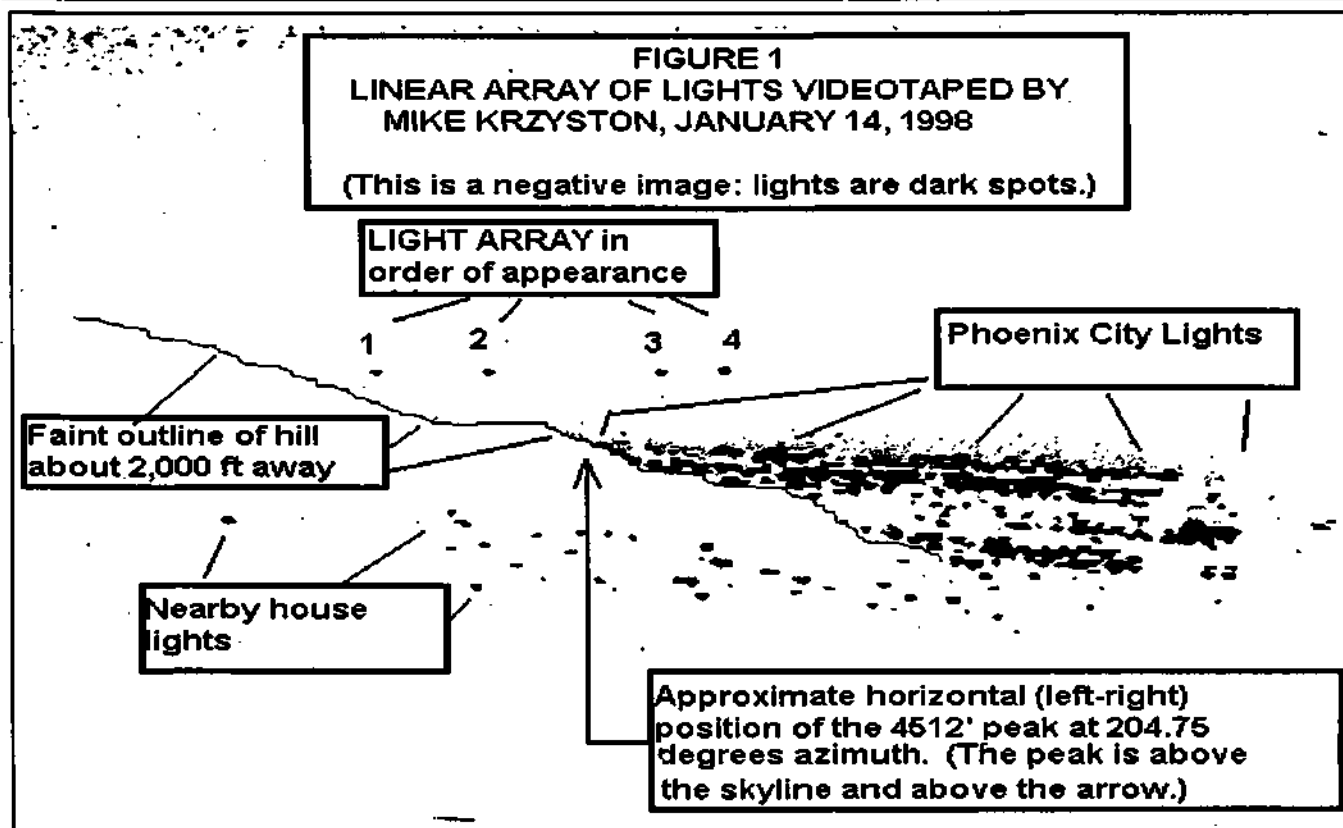
On the other hand, his triangulated location was not far enough southwestward to place the lights over the Barry Goldwater Air Force Training Range. Thus it appeared that either the National Guard had actually dropped the flares over an area roughly 30 miles northeast of the Range or else Motzer's triangulation was not accurate. But if Motzer's triangulation was not accurate, then it did not prove the lights were south of the Estrellas.

Along with with his triangulation, Motzer listed about a dozen reasons why the flare theory seemed valid, certainly not the least of which is the fact that the National Guard claimed to have dropped flares during the time period of the sighting and in the general direction of the lights sighted at 10 p.m.. He ended his report by stating that the event #1 and #2 sightings had not yet been explained. (He made no comment on truck driver Bill Greiner's sighting.)

Like most people in MUFON, I had heard the news media accounts and read the MUFON articles and was confused. Could all those people have been wrong? If the lights were flares over the Goldwater Range more than 50 miles from Phoenix, why were they so bright? Why did the arrangements seem so geometric, and why didn't they drop downward?

The repeat flap

These were all questions in my mind when I heard of the repeat "flap" of sightings that took place on Jan. 14, 1998. Once again the public was being asked to believe that large arrays of bright orange lights were only flares dropped by the military over an area far from Phoenix. Although I wondered about all this, no one had sent me videos to study, so I did nothing to



answer my own questions until early April when one of the witnesses asked me to analyze her photos and videos of the Phoenix sightings.

I received a phone call from a lady herein referred to as "L" (who wishes anonymity). She told me that she had video of the March 13, 1997, and Jan. 14, 1998, events as well as photos and videos of numerous other sightings spanning a three-year period (1995-1998), sightings which she had never made public. She wanted an independent evaluation of her photo and video evidence before she made a decision as to whether or not to make her sightings public. It was clear to me that she didn't accept the flare explanation, although she was (quite properly) hesitant to reject it without convincing proof that the lights couldn't have been flares.

Another sighting

She also told me of a nighttime sighting she and her husband had in February, 1995, of three apparently spherical orange lights which were hovering in a triangular arrangement (one above two that were side by side). They were below her, but above the ground less than 1,500 feet away (her house is on the side of a hill; she was looking downward). Her husband called her attention to the lights, and after looking at them for a short time, she decided to photograph them. By the time she returned to the porch where she had an unobstructed view the upper one

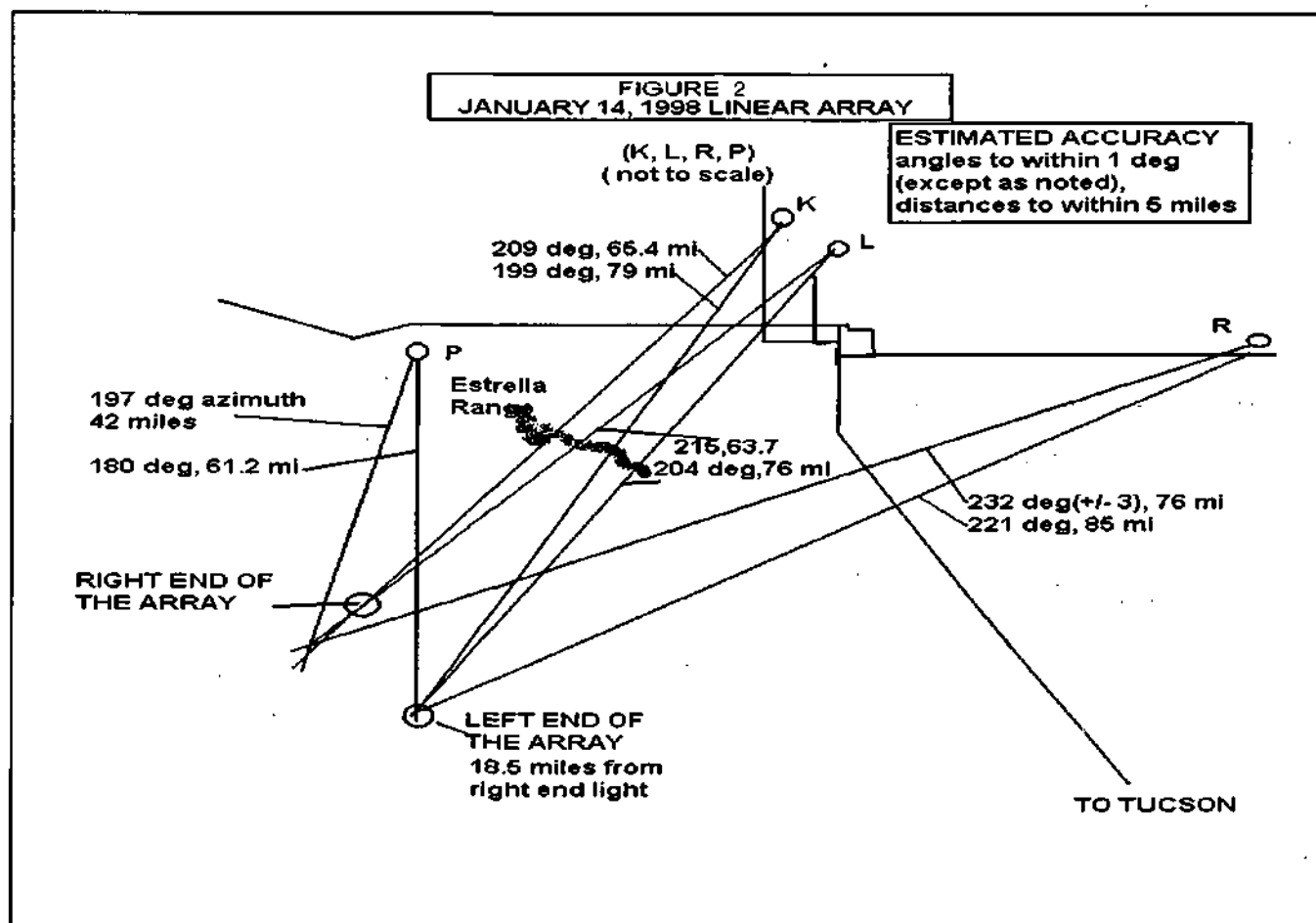
had gone out. She was able to take photographs of the two lower lights before they disappeared. This event has some very interesting photographic information related to the time duration of the sighting. They are still under analysis.

Over the following weeks and months I received from her and other witnesses copies of videotapes and supplementary information which allowed me to triangulate the lights; that is, to locate their positions relative to the witnesses with a good degree of accuracy. The videos I used were from L, Mike Krzyston (K), Chuck Rairdon (R) and witnesses (P) who desire anonymity.

I decided to begin my analysis with the Jan. 14, 1998, videos because (a) there is no doubt that they videotaped the same light arrays, so triangulation of each individual light in each array would be possible, (b) each of these videos has nearby geographic features visible at night that can be used as reference points for measuring directions, and (c) the spacing between the witnesses was quite large, so the triangulation would be accurate.

Slightly tilted line of lights

One particular array of lights that appears in all videos was a slightly tilted line of unevenly spaced lights. Figure 1 shows this array as it appears in the K video. (Note that this is a negative image with the lights appearing as dark spots.) What was particularly re-



markable about this light array was the extreme linearity that could be checked by laying a straight edge on a TV screen or computer monitor. The images in any one of the videos was a straight line to within the accuracy set by the sizes of the light images themselves. This immediately raised a question: could the Air Force drop flares in a perfectly straight line? The answer is: not intentionally, since flares are ejected from planes at some speed, and they fall downward and then drift, once the supporting parachute opens. Then the question became: what were these lights? Could they be UFOs?

Making the calculations

The results of the calibrations of the video cameras and the subsequent triangulation are shown in Figure 2. The positions of the witnesses are indicated on the map, along with some of the sighting directions. All azimuth and elevation calibrations were based on a contour map (Arizona Atlas and Gazetteer, DeLorme Mapping, Freeport, Maine, 1993; scale is 1:250,000 or 1 inch = 3.95 miles) so the directions and estimated elevations should be quite accurate. Locations of the lights were determined both graphically and analytically (using trigonometry) and should be accurate to

within several miles.

A number of other lights and light arrays were seen and videotaped that night. Triangulations were accomplished for several of these, including a triangular array that appeared after the linear array disappeared. (The results of these other triangulations are presented in a much more complete paper published at www.geocities.com/area51/stargate/5518/maccabee.html with a link to the corresponding illustrations published at www.risk.org.)

The triangulation results consistently showed the lights to be southwest of Phoenix at distances between 60 and 80 miles from K and L, farther from R and as close as 40 miles to P. This placed the lights over the Air Force range. The durations of these lights, when they were recorded from the time of their initial appearance to disappearance with no stopping of the camera, were within the range of 4½ to 5 minutes.

A movement to the left

They moved to the left at speeds ranging from 30 to 40 mph. The altitudes were in the range 13,000 ft to about 19,000 ft, and each light dropped downward several thousand feet before it went out.

The witnesses were looking toward the Air

Force test range during these sightings.

The March 13 light array

The major goal of this investigation of the light arrays was to provide an accurate estimate of the distance to the March 13, 1997, lights. The technique for accomplishing this was developed during the investigation of the Jan. 14, 1998, light arrays, an example of which is presented in Figure 2. Having determined the distances to these arrays, I simply transferred the methods and some of the calibration measurements to the March 13 investigation which was based on the videos of K, L, and R (P was not a witness to the March 13 lights).

K saw a single anomalously bright light in the sky south of his house in the direction of the Estrella range at about 10 p.m. and set up his video camera to film it. Hence he had his camera going when the arc-shaped array began to appear. He watched it form, evidently astounded at what he saw (as was his wife). He kept his video camera running as the lights started to disappear. The second light disappeared almost immediately, and the others went out (not in the order of appearance) over the next 2 minutes. (Note: this is the video which has been shown the most in TV stories about the Phoenix lights.)

Witness R did not see the lights come on, but did videotape their disappearance, which occurred in a slightly different order than the disappearances in the K video. L says she initially saw six lights in the sky, but by the time she got her camera going there were only 3 left. As with the Jan. 14, 1998, triangulation, triangulation of the March 13 lights shows that they were far southwest of Phoenix over the Air Force range.

Lights seemed steady

One reason given for rejecting the flare hypothesis was that the light arrays seemed to be steady in the sky, not dropping downward as one might expect for flares on parachutes. However, the failure to notice a drop downwards of a few thousand feet at a distance of, say, 60 miles, is not surprising.

The videos did provide evidence of motion of the lights. Light #9 moved in the R video over its time of visibility (about 150 seconds) downward about 1,350 ft, or about 6 mph, and leftward about 245 ft., or about 1 mph. A similar analysis of light #8 as it appears in the K video (the longest light visible in the K video, about 130 seconds) shows that it moved downward about 2,000 ft at about 10 mph and leftward about 1,300 ft at about 7 mph.

The calculated downward and leftward motions of the two lights from the two videos are not equal, but they are remarkably close considering the difficulties in determining small changes in sighting direction and angular elevation in these videos. (Recall from above

that at 55 miles a change in angle of only about 0.1 degree corresponds to a change in position of about 500 ft. At greater distances the distance change is even greater.)

CONCLUSION

The witnesses were impressed by the extreme brightness, orange color, and stability of these light arrays seen on March 13, 1997, Jan. 14, 1998, and other days not discussed here. They were convinced that the arrays were relatively close to Phoenix, perhaps near the Estrella Range or even closer. If this were so, they could not have been caused by the Air Force dropping flares. (How could the Air Force, on Jan. 14, 1998, drop flares in a straight line anyway?) Besides, they could see no smoke and no parachutes, both of which are obvious when parachute flares are observed "close up" (within a few miles or with powerful telescopes from a distance).

The triangulation data, however, show that the lights actually were quite far away, much farther than the witnesses and the initial UFO investigators had believed. Furthermore, at least the lights studied in this four-month investigation were over the northeast portion of the Air Force range. (Not all lights were triangulated; some of them could have been elsewhere.) Furthermore the lights were not perfectly stationary: they did drop downward while they drifted sideways. So now the question is, how do the observations and video data compare to flares at a distance of 70 or so miles?

The LUU-2B/B flare projects between 1.6 and 1.8 MCP (million candle power) and burns for 4 to 5 minutes (the longer the duration of burn, the lower the candle power). These flares are made by the Thiokol Corporation in Utah and cost several hundred dollars each in large quantity. They are intended for ground illumination so that aircraft can observe ground targets even in the dark. Although they are rated for a certain minimum illumination of the ground when dropped within a few thousand feet, they would certainly also provide some illumination even from high altitude.

In particular, one might conjecture that a high altitude flare when used in combination with night vision devices employed by an air crew flying at a lower altitude than the flare (so they wouldn't "burn" the night vision device) could provide enough light for the crew to see objects on the ground. Air Force officials who have commented on these sightings have pointed out that flares such as these could be seen perhaps as far as 200 miles.

Extreme brilliance

The extreme brilliance of these flares, which are not physically very large (5" diameter, 36" long), is such that when viewed from many miles away one

would need high quality, powerful telescopic optics to see either the smoke or the parachute. For any lesser optical system the glare from the flare would cover a larger area on the optical focal plane than the spacing between the image of the flare and the image of the parachute. In other words, the observer would have the same problem as an astronomer trying to detect the presence of a planet (seen only by reflected light) near its parent star: the image of the star, or glare from the star image, covers up the much dimmer image of the planet.

Why the orange appearance?

The witnesses also reported that the lights appeared orange. This might be a result of transmission of light through the atmosphere over long distances, a transmission which tends to reduce the blue content, leaving the color spectrum weighted toward the orange or red, as at sunrise or sunset. (This conjecture could be tested in an experiment such as suggested below.)

Finally, not to be discounted is the claim by the Maryland National Guard (statement made in late July, 1997) that on March 13, at about 10 p.m. they dropped flares over the Air Force training range at the unusually high altitude of about 15,000 ft. They were probably ejecting flares while flying home from the test range before landing at Davis-Monthan Air Force Base. A single A-10, the type of plane that drops the flares, carried 8 flares. It is to be noted that the arc consisted of 8 lights (numbers 2 through 9 in order of appearance on the K video) which suggests that the light labeled #1 was the remaining flare in one A-10 and the arc was the "full load" of flares in another A-10.

Conclusion: flares

Hence it appears reasonable to conclude that the light array of March 13, 1997, and other similar arrays such as on Jan. 14, 1998, (during a week when flare drops were being carried out over the Air Force training range) were created by high altitude flares. The witnesses, however, have stated that they would be convinced only if it can be positively demonstrated that flares dropped at high altitude and distances greater than 60 miles appear as the lights they saw and videotaped.

This demonstration could be accomplished at some time when flares are being dropped by having a coordinated observation plan ready to carry out upon notification of flare drops. One or more observers close to the test area would videotape and record the timing and visual appearance of specific flares while simultaneously having observers at great distance, such as in Phoenix, also observing and recording the same flares. Coordination could be accomplished using cell phones so that there is no question of what was being seen

close-up and at great distances.

Note: the analysis presented here is not intended to apply to the sighting events between 8 and 9 p.m. on March 13, but only to the "10 p.m." sightings of bright "stationary" lights and light arrays of several minutes duration that appeared southwest of the Phoenix area.

Acknowledgement

This investigation could not have been carried out without the help of the witnesses and the enthusiastic support of L, who provided testimony, video copies, maps, and transportation during my visits to Phoenix.

Aerial Phenomena Research Organization files located

By Jan Aldrich

PROJECT 1947, the research study of the beginning of the UFO era, has announced the recovery of a large portion of the microfilmed files of the Aerial Phenomena Research Organization (APRO), the first worldwide civilian UFO group to be organized. The APRO files have been inaccessible to researchers for over a decade since the demise of the organization following the deaths of founders Coral Lorenzen in 1988 and Jim Lorenzen in 1986.

Founded in 1952 and already mentioned menacingly by the CIA Robertson Panel in January 1953, APRO collected UFO data from all over the world during its nearly four decades of existence. APRO had an extensive UFO investigative network with representatives in more than 50 countries, especially in South America. In the 1970's, with the aid of a small grant, APRO began microfilming its UFO sighting files. As many as three separate microfilm reels are thought to exist. The first microfilm roll contains reports from ancient times to December 1956. The second microfilm confirmed to exist contains reports from December 1956 to 1962. The third microfilm, thought to exist by a number of people, but yet to be confirmed, evidently covered 1962 to 1966.

The microfilm was located through the courtesy of Brad Sparks, long time UFO researcher and former APRO assistant director of research. Sparks also had leads to the second microfilm reel which are now being pursued by Project 1947.

The reports, letters, investigations, and newspaper clippings contained in the APRO microfilm have few duplications of the reports in the files of NICAP, CSI, CUFOS, Barry Greenwood, Dr. Leon Davidson, or Loren Gross.