The Bruce Road Video Only UFO

An Oregon MUFON Case Study

by

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Abstract

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Description	Witness Allen Jefferson (pseudonym) was watching and video'ing a light plane practicing package drops in a field near Monroe, OR. Later, when he arrived back home and looked at the video, he was surprised to see a strange object on video speeding past the plane as it made a drop.
Witness(es)	No eyewitnesses. Just video of a strange object near a low flying airplane.
Date and Time	Summer 2010, between about 2 PM and 4 PM.
Place	At Bruce Road and Highway 99W north of Monroe, OR.
Weather	Sunny, no rain.
Duration	Total time 16 seconds of video.

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Table of Contents

INTRODUCTION

This case features no eyewitness. That's right, no eyewitness. Is there really a case then? The answer is yes. Strictly speaking standard science of today is done all the time without an eyewitness because only instrumentation allows us to detect the evidence that scientists are seeking to learn more about. Of course, they usually know a lot about what they are aiming their instruments at. Their subjects are typically well known already and they are trying to extend their knowledge of the subject.

But the point here is that the unaided eyes of scientists do not see what they are studying, and they depend on an elaborate interpretive scheme applied to their instrumentation results to eventually generate more knowledge about their subjects. The unaided human eye does not see viruses, yet we know they exist through our instrumentation and that elaborate interpretive scheme of scientific knowledge and principles. The unaided human eye does not see sunspots, but we know they exist.

A UFO case that involves only photos or video of a "UFO" is especially difficult to "prove beyond a reasonable doubt" because all the possible richness of eyewitness testimony does not exist. And that is true of this case. It involves only the evidence that two brief videos present. Yet there may be enough detail in one of the videos to make a case for a genuine UFO "beyond a reasonable doubt." See what you think as you read through this report.

SIGHTING DESCRIPTION

In the summer of 2010 between the hours of about 2 PM and 4 PM, Allen Jefferson (pseudonym) was standing in a field with his video camera at the ready. He was located at Bruce Road and Highway 99W just north of Monroe, OR, which is about 20 miles north of Eugene. He was watching a Cessna 152 make south to north runs over the field in order to practice dropping small packages out the window at a target.

The practice runs were helping the pilot prepare for similar operations in third world countries that needed medical supplies and food. See *Figure 1, Crop of Frame of Video #1 Showing Package and Cessna*. As the airplane would make its practice runs, both Allen and one other person used the video functions in their digital cameras to video the passes.

There were seven people total involved in this exercise and Allen was one of them. There were two people taking video (Allen Jefferson was one), three people observing and recording impact information about the dropped packages, and two people in the Cessna—a pilot and a person dropping the packages. As was determined later, no one involved in the practice runs over the field saw or was aware of anything unusual involving possible UFOs at the time.

When Allen got home and reviewed the video of one of the passes, he saw in the video what he thought was an anomalous small, dark object zoom past the airplane as it made its package drop. He thought about the somewhat odd-looking object (not obviously a bird or insect) and then hit on "UFO," so he looked on the Internet and found his way to Oregon MUFON. He sent an email about his story and then offered the puzzling videos for analysis. *Figure 2, Crop of Frame of Video #1 Showing UFO and Cessna.*

Source: Allen Jeffersonson

Figure 1. Crop of Frame of Video #1 Showing Package and Cessna

The Cessna was making practice runs from south to north over a field next to Highway 99W and Bruce Road. The practice was for accurately placing a package dropped from the plane onto a target on the field, similar to operations in third world countries for drops of medicine and food. The white patch in the field is the package target.

Source: Allen Jefferson

Figure 2. Crop of Frame of Video #1 Showing UFO and Cessna

This frame shows a UFO as it moves in the same general airspace of the airplane. The pilot did not see the UFO events at any time. The UFO is the black object behind the airplane here.

ENVIRONMENT

The environment for this sighting is rural Oregon in the Willamette Valley just north of the small town of Monroe, OR. Monroe is north of Eugene, OR, about 20 miles on Highway 99W. The weather was a pleasant, sunny, rainless day in the summer. See *Table 1, Weather on Video'ing Day*.

Table 1. Weather on Video'ing Day

Event Date	Event Time	Temp (F)	Visibility (miles)	Wind Direction	Wind Speed (mph)	Conditions
Summer 2010	About 2 to 4 PM	warm	10	?	?	Clear

EVIDENCE

The evidence in this case consists only of the following:

- Video #1 consisting of 16 seconds and a fraction with two and possibly three sequences of UFO type objects.
- Video #2 consisting of 8 seconds and a fraction with one probable bird "blob" image. This video appears to show only a bird-like, indistinct object in addition to a close-up of the Cessna 152. It is not analyzed in this case study since the possible anomalous evidence is of much lower quality than the evidence in Video #1.

The Witnesses

There were no eyewitnesses to the UFO sequences in Video #1. The videographer (Allen Jefferson) of Video #1 observed the UFO only after he reviewed the video at home on his computer. He obtained the Video #2 footage for me when I inquired about there being any more videos or photos of the events during the airplane practice runs. There were at least three people at this event: Allen, a friend, and the pilot. No one saw anything unusual at the time.

The Three UFO Sequences From Video #1

The three sequences offer some interesting evidence for the anomalousness of the UFO images. In chronological order, the Sequence #1 UFO is the least interesting in itself because of its small image size and faintness. The Sequence #2 and #3 UFOs are more interesting because of their larger image size and apparent closeness to the videographer and airplane.

Video #1 was displayed in Final Cut Express at a magnification of 200% in each of the Sequences #1, #2, and #3 in the tables below. The images were captured by the Macintosh Grab screen capture utility and copied and pasted here into Apple's Pages word processor. They were unaltered otherwise.

Sequence #1 UFO

The time duration is about 6.4 seconds. The UFO in this sequence appears to be off in the far distance above and in front of the Cessna as it gets ready to drop its package. The UFO is moving to the north as the Cessna is. See *Figure 3, Sequence #1 UFO Above the Cessna* and *Table 2, Sequence #1 UFO in Video #1*.

Source: Allen Jefferson

Figure 3. Sequence #1 UFO Above the Cessna

The very faint UFO maneuvered around in the sky, in the far background apparently, changing shape and tone from darkish to lightish including disappearing for frames at a time, and then finally appeared over the Cessna, but still far in the background. The videographer (Allen) was unaware of the very faint UFO and followed the airplane as it made its practice run. (Frame 07;09.)

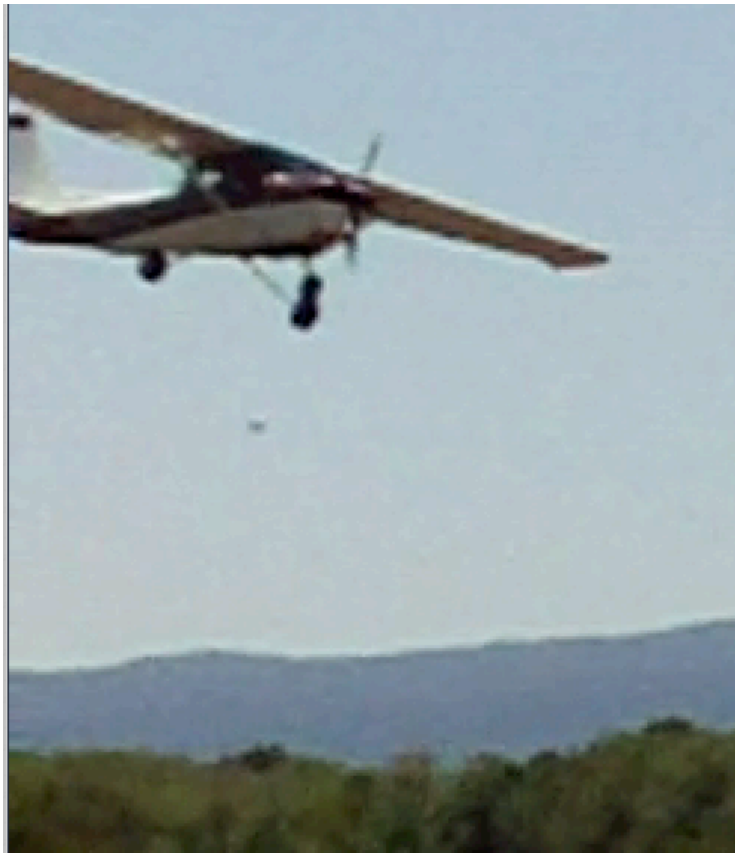
Table 2. Sequence #1 UFO From Video #1

Frame Number	Image	Comment
01;14		First frame where UFO is faintly visible here in the center.
02;23		Again faintly visible, but better after more than one second.

02;26		About a 1/10 second later.
03;03		Remains pretty constant between 02;26 and here.
07;05		In almost 4 seconds, lots of changes from previous frame: (1) UFO gets closer to plane till it is overhead, (2) UFO disappears and reappears a couple of times, and (3) UFO seems to change from darkish to lightish. It is quite variable in appearance.
07;27		Finally disappears after this frame.

Sequence #2 UFO

The time duration is about 23/30 seconds (0.77 seconds). This is a much shorter time duration than the Sequence #1 UFO, which is 6.4 seconds long. This UFO is much larger in pixel size (9 horizontal by 7 vertical) than the Sequence #1 UFO and seems much closer to the Cessna. It varies quite a bit in appearance. See *Figure 4, Sequence #2 UFO Below Cessna* and *Table 3, Sequence #2 UFO From Video #1*.



Source: Allen Jefferson

Figure 4. Sequence #2 UFO Below Cessna

The UFO appears below and somewhat in the background, but not the far background, under the Cessna as the plane makes its pass over the field so that the practice package can be dropped accurately out the side window. The UFO is light gray with an apparently lighter top surface. (Frame 11;10.)

Table 3. Sequence #2 UFO From Video #1

Frame Number	Image	Comment
11;07		First frame where Sequence #2 UFO is visible. It seems to be a light gray object with highlight on top. UFO appears next to left side frame and zooms along and under the Cessna and passes it and goes out the right side frame.

11;10		UFO is directly below Cessna, but appears to behind but not in the far distance.
11;13		Just under the left wing now as it zooms ahead of the Cessna.
11;22		Well ahead of the Cessna now.
11;25		Apparent “highlight from sun”(?) shifts to bottom now. UFO continues to gain distance on the Cessna. Appears to parallel the flight path of the Cessna.
11;28		More dark than gray here.
12;02		Still dark with apparent highlight on top. In the next two frames, the UFO is the closest to the videographer if the UFO was truly paralleling the flight of the Cessna because in the next second the Cessna was the closest to the videographer for the whole sequence.
12;05		Dark bottom and light top clearly visible here. And the pixel dimensions (size of UFO) are the biggest in these last two frames since the zoom ratio of the lens did not vary during the entire 16 seconds of Video #1.

12;07		Last frame before UFO disappears out the right side of the frame.

Sequence #3 UFO

The time duration is about 11/30 (0.37) of a second. This UFO is the largest image size on average than any of the three. It is about 15 horizontal by 9 vertical pixels in size. The appearance is still variable, but less so than the Sequence #2 UFO. See *Figure 5, Sequence #3 UFO Above Cessna* and *Table 4, Sequence #3 UFO From Video #1*.

Source: Allen Jefferson

Figure 5. Sequence #3 UFO Above Cessna

The UFO appears above the Cessna as the airplane is pulling out after making its pass over the field. The UFO is dark gray, almost black, here. (Frame 15;11)

Table 4. Sequence #3 UFO From Video #1

Frame Number	Image	Comment
15;04		First frame where UFO is visible. UFO is a dark oblong shape with some possible “highlighting” that is variable as it zooms through the frames close to the Cessna.
15;05		The shape varies somewhat from frame to frame but not much.
15;06		More variation.
15;07		Still about the same.
15;08		Significant “highlighting from sun”(?) appears on bottom now.
15;09		Less “highlighting” now.
15;10		Blocky appearance now.

15;11		Back to more smooth appearance with some bottom “highlighting.”
15;12		Faint “highlighting” on bottom and top now.
15;13		“Highlighting” on ends and bottom now?
15;14		Less oblong overall shape now.
15;15		Last frame UFO is back to more oblong.

ANALYSIS

This case offers a good amount of UFO evidence from Video #1. We deal here mostly with the Sequence #2 and #3 UFOs since they offer a much larger image size than the Sequence #1 UFO, and they are apparently much closer to the Cessna. We use the evidence and some analysis and calculations with reasonable assumptions to see what we can determine about the following:

- UFO colors.
- UFO shape.
- UFO path.
- UFO distance.
- UFO size.
- UFO speed.

Usually, only color (or sometimes movement characteristics) is easily assessed when it comes to UFO evidence even when we are lucky enough to have more than eyewitness testimony as we do here in Video #1. However, the majority of UFO photos and videos do not offer enough evidence to assess UFO distance, size, or speed with reasonable accuracy, but Video #1 offers enough to be interesting.

UFO Colors

The color of the UFOs in Sequences #2 and #3 of Video #1 is a neutral gray or bluish color. There may be some neutral whitish color also in some of the UFO images in Sequence #2, which appears to be inherent to the UFO as some sort of real "highlight," either reflective of or emitting a lighter, neutral whitish color. These are about the only color observations revealed in the UFO images. See *Figure 6, Sequence #3 UFO Above Cessna*.

No "hidden" or unexpected color information is revealed in the UFO images in any of the sequences in Video #1. The UFO(s) seem to be just uniformly matte gray of a darker (or sometimes lighter) neutral midtone range.

A. Unmanipulated crop from frame 15;11 of Sequence #3 of Video #1.

B. The same crop as Side A manipulated in Photoshop with the levels command to lighten up dark tones to see what inherent colors might be hidden.

Source: Allen Jefferson and Keith Rowell

Figure 6. Sequence #3 UFO Above Cessna

The UFO appears above the Cessna as the airplane pulls out after the package drop. The right side crop is manipulated by lightening the dark tones with the Levels command to show inherent colors. The UFO shows nothing but blue tones suggesting perhaps that the UFO is very dark but essentially reflecting the sky. Note that the propeller at the tip on the Cessna is a similar color to the UFO. Examination of the two videos of the Cessna makes it appear as if the propellor is painted a uniformly dark matte gray color and is not somewhat aluminum silvery like some propellers on Cessnas. (Frame 15;11.)

UFO Shape

As *Table 3, Sequence #2 UFO From Video #1*, and *Table 4, Sequence #3 UFO From Video #1*, show, the basic shape of the UFOs is a compact, horizontally oblong shape. This does not vary much in the sequence of frames. *Table 2, Sequence #1 in Video #1* shows a possible UFO too far away to determine much at all about shape except that it is, again, a more or less compact shape. This is consistent with the Sequence #2 and #3 shapes. Of course, there is the possibility that this is an airplane or bird and not

related at all to the two UFOs later in the video. However, the Sequence #1 UFO is traveling in the same general direction as the two UFOs in the later sequences.

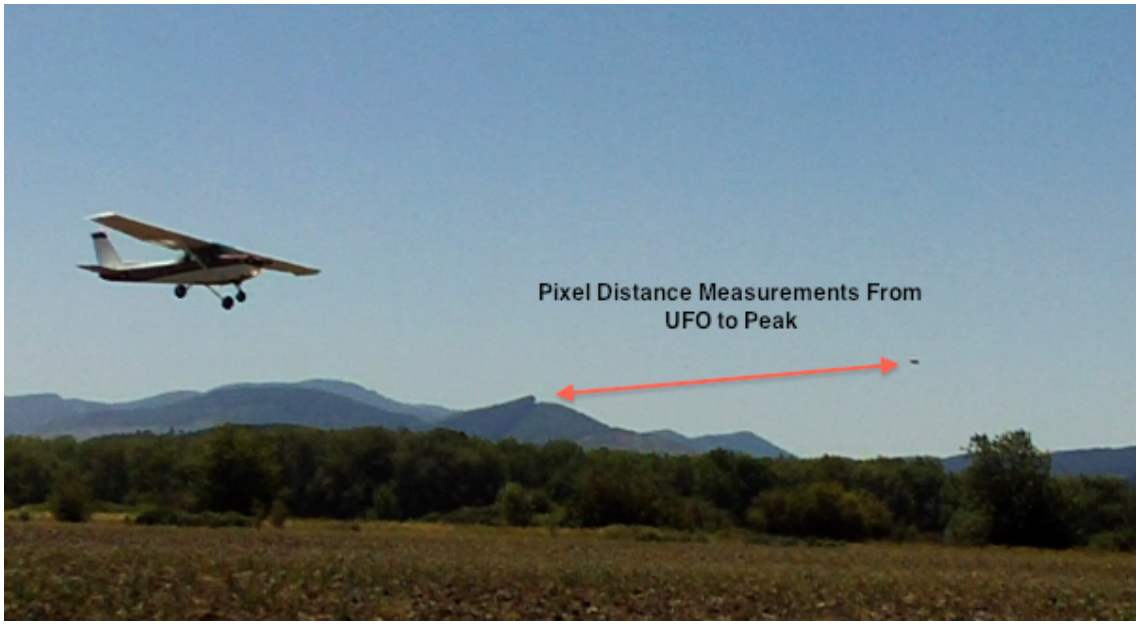
UFO Paths

The UFO paths in Sequences #2 and #3 of Video #1 were chosen for a small study of paths because all the frames of the sequences happened to both have a constantly visible, prominent landmark—a small peak in the background. See *Figure 7, Pixel Distance Measurements*.

Two paths and a changing distance were chosen to study for each sequence:

- The UFO path relative to the peak.
- The Cessna path relative to the peak.
- The distance between the UFO and Cessna as they both moved through the air.

For the study, each frame was captured as a file and then brought into Photoshop so that X-Y pixel values could be ascertained for the UFOs, the Cessna, and the peaks as each point changed in its position from frame to frame during the videotaping. The distances were then computed and plotted in an Apple Numbers spreadsheet. The results appear as *Figure 8, Three Distance Measurements for the Sequence #2 UFO* and *Figure 9, Three Distance Measurements for the Sequence #3 UFO*. *Figure 7, Pixel Distance Measurements*, shows the basic idea for the measurements. See *Appendix A, Pixel Values for UFO Paths Study*, for tables of the pixel distances for the three measurements for each sequence.



Source: Allen Jefferson and Keith Rowell

Figure 7. Pixel Distance Measurements

The illustration shows the prominent peak that the UFO and Cessna flight paths were measured against. In the video, it looks like the UFO moves above the terrain in a straight path from south to north, more or less tracking the Cessna. Taking the measurements and plotting the results shows graphically that the UFO does indeed do that. (Frame 12;03.)

For all three curves in the plots in both figures, the X-Y values are in time order and each 1/30 of a second apart. The plotted values total just about one second of time for the Sequence #2 UFO and just about a half second for the Sequence #3 UFO.

Sequence #2 Distance/Path Curves

Distance of UFO to Peak Curve. The fact that this curve descends and rises in a fairly linear fashion indicates that the UFO traveled a straight line path with respect to the terrain (the peak) in the distance. Note that the line segments are fairly equal from frame to frame in the downward sloping part of the curve, and they are also fairly equal but longer in the upward sloping part. This may indicate that the UFO was traveling at one rate of speed approaching the peak and a slightly faster rate moving away from the peak.

Distance of Plane to Peak Curve. This plot descends uniformly downward with the line segments being equal. This is what we would expect if the Cessna was traveling at a constant speed, which it was just prior to the dropping of the package out the side window.

Distance of UFO to Plane Curve. Two interesting aspects to note in this curve are the slight curve (non-linearity) in the upward part of the curve and the longer line segments in the second half of the upward part of the curve. The slight curve (non-linearity) may mean that the path of the UFO with respect to the Cessna was not quite linear (straight). The longer line segments just mean that the UFO with respect to the Cessna was moving faster in the second half of its flight, which we already know from the Distance of UFO to Peak curve. (The left wing tip was chosen as the measurement point for the Cessna.)

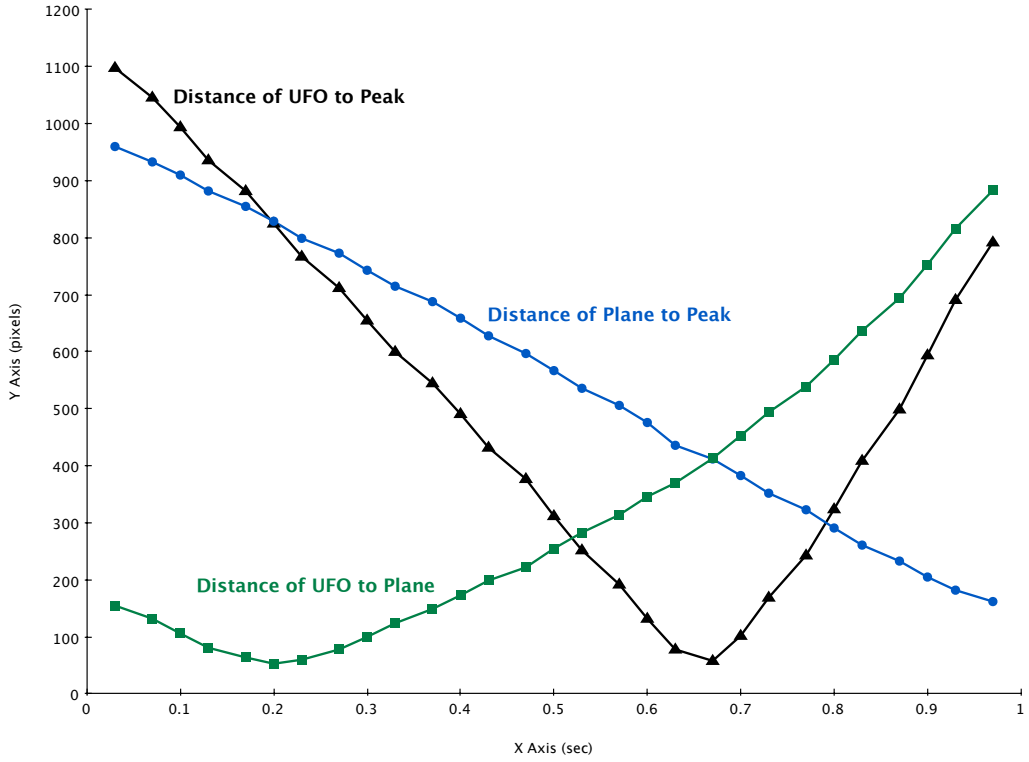


Figure 8. Three Distance Measurements for the Sequence #2 UFO

Sequence #3 Distance/Path Curves

Distance of UFO to Peak Curve. The fact that this curve descends and rises in a fairly linear fashion indicates that the UFO traveled a straight line path with respect to the terrain (the peak) in the distance. Note that the line segments are fairly equal from frame to frame in the downward and upward sloping part of the curve. This indicates that the UFO was traveling at one rate of speed both approaching and receding from the peak.

Distance of Plane to Peak Curve. This plot ascends uniformly upward with the line segments being fairly equal. This is what we would expect if the Cessna was traveling at a constant speed, which it was just after dropping of the package out the side window. Its presumed acceleration is entirely too gradual to show up in this short, less than a second time duration.

Distance of UFO to Plane Curve. One interesting aspect to note in this curve is the shorter line segments at the bottom of the curve. This may mean that the path of the UFO with respect to the Cessna was not quite linear (straight). This may mean that the UFO slowed slightly as it approached the plane at its closest point. (The right wing tip was chosen as the measurement point for the Cessna.)

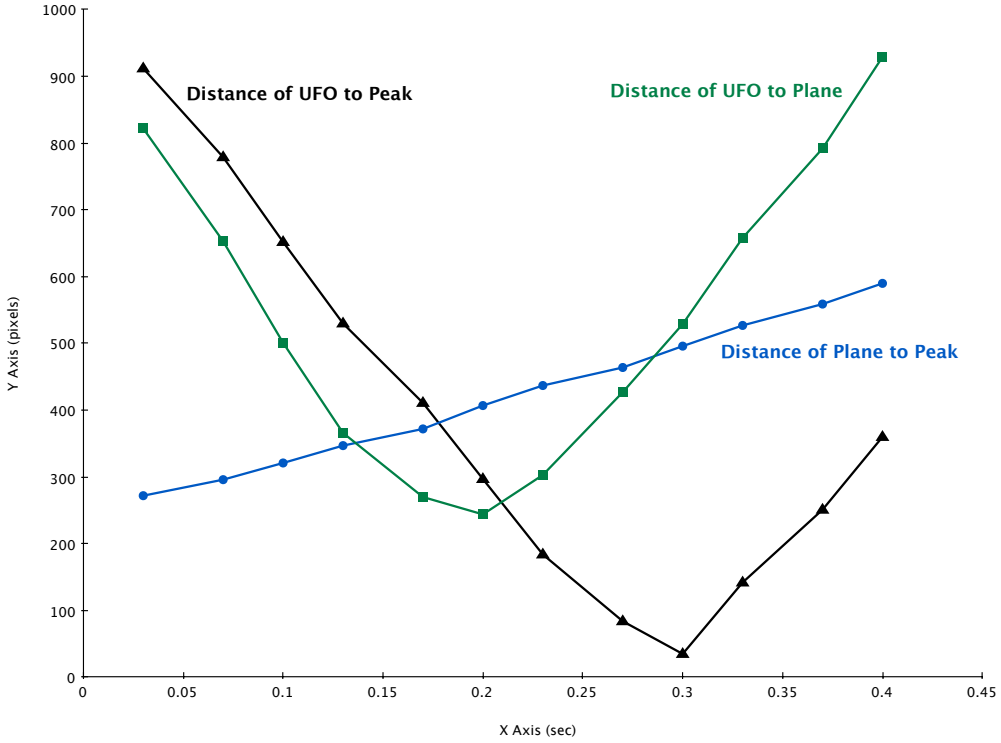


Figure 9. Three Distance Measurements for the Sequence #3 UFO

Angular Size of the UFO(s)

To get some idea of the angular sizes of the UFOs in Video #1, we need the angular size of the width of the video frame. We can calculate angular size here because we know the focal length of the Kodak Zx1 pocket camera's lens and the size of the Kodak Zx1's photo sensor.

An aside. Angular size is not real or absolute size. Angular size is measured in degrees or radians and real size is measured in feet, yards, miles, etc. To understand how big or small something is compared to objects we know, we need real size. But angular size can be a stepping stone to real size, and here is used later in this analysis to ask "what if" questions about identification candidates such as birds, bugs, airplanes, etc., so that we might eliminate them or discover a positive ID with an identification candidate.

We don't know the distance from the camera position that the UFOs are so we cannot calculate a more or less accurate real size, but we can still make some assumptions about the distances of the UFOs from the camera position and calculate some probable sizes. These probable sizes are discussed later under *UFO Distances*.

We use the following facts to calculate an angular size for the Sequence #3 UFO:

- The Cessna is 24 feet long. (http://en.wikipedia.org/wiki/Cessna_152)
- The Video #1 pocket video camera is a Kodak Zx1 with a fixed 4.1 mm lens. (Kodak Zx1 user manual)
- The HD video yields a frame capture of 1280 horizontal by 720 vertical pixels. (Final Cut Express frame extraction)
- The Kodak Zx1 sensor size is 3.24 mm (H) by 2.41 mm (V). (Aptina Imaging data sheet)

Finding Angle of View of Kodak Zx1 Camera

The focal length of the Kodak Zx1 pocket camera is always 4.1 mm. There is no zoom lens on this camera. It is a fixed focal length camera.

We can use the formula for calculating the horizontal angle of view of lenses (http://en.wikipedia.org/wiki/Angle_of_view) thus:

$$\alpha = 2 \cdot arctan \frac{h}{2f} = 2 \cdot arctan \frac{3.24\ mm}{2 \cdot 4.1\ mm} \approx 43°$$

So, the horizontal angle of view of the Kodak Zx1 is around 43º.

In this analysis, we pick the Sequence #3 UFO because it is the largest in pixel size. We can now estimate the angular size of the Sequence #3 UFO by doing a ratio and proportion between pixels and degrees.

The number of pixels in the horizontal direction of the full frame is 1280 with an angular width of 43º. An average pixel length of the Sequence #3 UFO is about 16 pixels long. By ratio and proportion, we have

$$\frac{43°}{1280} = \frac{x}{16} \Rightarrow x = \frac{16 \cdot 43°}{1280} = 0.54°$$

So, the angular size of the Sequence #3 UFO is 0.54º. This means that if you were to have been there and seen the UFO speed past the Cessna, you would have noticed a pretty big object. Why? Because 0.5º (which is very close to 0.54º) is the angular size of the full moon and it is prominent in the sky when visible. But angular size is not real (absolute) size. See *UFO Distances* for some idea of the real size of the UFOs.

UFO Distances

Since the Sequence #1 UFO seems to be obviously in the distance because of its smaller size and much fainter tone and color, due perhaps to normal aerial perspective of ordinary objects, which is caused by the blocking and scattering of light by dust, pollen, and other particles in air, we do not choose it for analysis here.

The Sequence #2 and #3 UFOs appear, and we believe, are actually much closer to the Cessna. This belief follows from the larger size and darker color of the UFOs. These characteristics incline us to believe that one or the other of the Sequences #2 or #3 UFOs is actually the same as the Sequence #1 UFO along with the moving of the Sequence #1 UFO in the same general direction (south to north) as the Sequence #2 and #3 UFOs.

Unfortunately, as is usual for UFO photos and videos, none of the UFOs appear in front of anything but clear sky. So, there is no known maximum distance away for any of the UFOs. However, we do have the aerial perspective characteristics and image size characteristics to consider.

Even though we can't know for sure how far away the UFOs are, we can develop a conditional table of distances given a certain size. See *Table 5, Sequence #3 UFO Distances Given a Real Size*. The UFO in Video #1 in Sequence #3 is chosen here for the UFO distances table.

To calculate the conditional sizes, we use the following trigonometric equation, starting with one inch (0.08 ft).

$$\tan(0.54°) = \frac{0.08\ ft}{x\ ft} \Rightarrow x = \frac{0.08\ ft}{\tan(0.54°)} = 8.8\ ft$$

Table 5. Sequence #3 UFO Distances Given a Real Size

If UFO Size Is . . . (ft)	Then UFO Distance Away Is . . . (ft)
0.08	8.84
0.17	17.68
0.33	35.37
0.67	70.73
1	106.10
2	212.20
4	424.40
8	848.80
16	1697.60
20	2122.00
40	4244.01
80	8488.01
160	16976.02
300	31830.05
500	53050.08

So, we see that if the UFO is one foot long, it must be about 100 feet away. Examination of the video inclines us to believe that the UFO is behind the Cessna a distance, but not too far, perhaps between 500 and 1000 feet, but not much over that for the Sequence #3 UFO in Video #1. These kinds of distances would make the UFO around 5 feet to perhaps 10 feet in size. However, see *Birds and Bugs* under *UFO Speed* next for more discussion of the possible sizes and speeds of the Sequence #3 UFO in Video #1.

UFO Speed

To determine a probable speed of the UFO(s), we have three possibilities: the Sequence #1, #2, or #3 UFOs. The Sequence #1 UFO is video'd at too oblique an angle to the focal plane of the Kodak Zx1 camera, and figuring the total angle of view that the UFO travels through is too complicated. The Sequence #2 UFO is also a bit tricky considering these factors. So, just the Sequence #3 UFO is analyzed here since the obliquity of the focal plane to the UFO's path is negligible and the angle of view through which the UFO travels is more manageable (smaller).

To calculate speed, we need the distance and time because speed is distance divided by time. The time is given by the frame rate of the video, which is about 1/30 second per frame, or 30 frames per second. We have selected frames 15;11 through 15;16 since the scene doesn't move a lot in this short sequence. See *Figure 10, Frames 15;11 Through 15;15.* The scene has moved about 2º or 3º to the right and thus covers a viewing angle of about 43º plus 2º, which is about 45º.

Note that the paths of the Cessna and UFO are slightly oblique to the focal plane of the camera, which means that the Cessna and UFO have traveled through more distance than the actual calculations made here, which assume that the paths and focal plane are parallel. This means that the actual speeds of the airplane and UFO are probably faster than calculated (because more distance is traveled), but only by perhaps as much as one third or 33%. We ignore this complication here.

	
A. The UFO is just visible above the Cessna.	B. The UFO has traveled from left to right above the Cessna and disappears in the frame after this one.

Source: Allen Jefferson and Keith Rowell

Figure 10. Frames 15;11 Through 15;15

The frame has shifted to the right about 2º or 3º as Allen Jefferson follows the plane as it makes its package drop practice run. The UFO is just barely visible above the Cessna in Side A.

So we have the following numbers:

- Total time is 6/30 (0.2) seconds.
- A total angle of view of about 45º with about half of that traveled by the UFO: about 22.5º.

Now we can do a distance traveled calculation if we know how far away the UFO is. But, as usual, this number is hard to come by. So, we just have to calculate a range of distances and see what speeds come out of the calculations. We can then use these speeds to at least make birds or bugs plausible (or not) as identifications for the UFO.

We can use the following trigonometric equation to calculate a range of distances traveled and then calculate a range of speeds. For the following two equations, we use the value of 10 feet as an example.

$$\tan(\frac{45°}{2}) = \frac{x\ ft}{10\ ft} \Rightarrow x = 10\ ft \cdot \tan(\frac{45°}{2}) = 4.1\ ft$$

Now we can calculate the speed of the UFO if it was 10 feet away from camera as:

$$v = \frac{d}{t} = \frac{4.1\ ft}{6/30\ sec} = 21\ \frac{ft}{sec} = 14\ mph$$

See *Table 6, Possible Sequence #3 UFO Speeds* for a range of calculations varying with the distance that the UFO might have been from the camera. (Note the conversion from feet/sec to miles per hour in the table speeds.)

Table 6. Possible Sequence #3 UFO Speeds

If UFO Distance Away Is . . . (ft)	Then UFO Distance Traveled Is . . . (ft)	And UFO Speed Is . . . (mph)
10	4.14	14.1
25	10.4	35.2
50	20.7	70.4
100	41.4	140
250	104	352
500	207	704
1000	414	1408
2000	828	2810
5000	2070	7040

Bugs and Birds

We now have a range of speeds that the UFO traveled for a range of distances the UFO might have been away from the camera. Let's see how this stacks up to maximum speeds for bugs and birds the distances that have to be given the angular size of the Sequence #3 UFO from the camera.

A Bug

First let's calculate how far away from the camera the UFO was if it was actually a bug. We know that bumblebees are the biggest plausible bugs for the summer, rural circumstances of the UFO video in Oregon. Bumblebees are an inch in average length. (http://www.pestproducts.com/bumble-bees.htm)

We use the angular size of the UFO to find the distance from the camera that a one inch bumblebee would have to be if the UFO were actually a bumblebee:

$$\tan(0.54°) = \frac{0.08\ ft}{x\ ft} \Rightarrow x = \frac{0.08\ ft}{\tan(0.54°)} = 8.8\ ft$$

So, looking at *Table 6, Possible Sequence #3 UFO Speeds*, we see that a bumblebee would have to be flying at about 12.5 mph if it were 8.8 feet from the lens of the camera. This is well within the maximum speed of bumblebees of 33 mph. So, the bumblebee is a definite possibility.

A Bird

Using the same reasoning as for the bug above, we know that an average sized bird (an American Robin) is about 11 inches in length. So, a bird would have to be about 100 feet away and would be moving at about 140 mph, *which is much faster than any bird known in level flight*. (Falcons can reach up to perhaps a maximum speed in their steep dives (stoops) of up to 200 mph.) So, a "normal" bird is not a possibility for our UFO. But . . .

A hummingbird is a possibility and this bird averages about 4 inches in length. The numbers that come out of our equations make the hummingbird about 35 feet away. So, the hummingbird would have to

have been flying at a speed of about 50 mph. This would be the absolute top speed for level flight of a hummingbird. A hummingbird is a remote possibility for our UFO.

A Bug and UFO Image Comparison

Figure 11, Probable Honeybee and Sequence #3 UFO Comparison, shows a nearby bug photo of a probable honeybee. You can see that the honeybee is pretty recognizable even though the telephoto lens that took this photograph is focused fairly close to the camera. The Kodak Zx1 camera has a fixed "normal" lens and a small sensor so even at a relatively wide aperture of f2.8, the depth of field ("zone of sharpness") is very deep from close to the camera to infinity. This means that objects in a scene appear quite sharply focused from perhaps four or five feet to infinity for the Kodak Zx1. In *Figure 11, Probable Honeybee and Sequence #3 UFO Comparison*, the UFO and tail of the Cessna appear here as perhaps not sharply focused due to high magnification, but are in fact well within the depth of field zone of sharp focus. (The UFO and Cessna tail appear "out of focus" perhaps because they are at a high magnification compared to the honeybee, which also comes from a photograph of much higher resolution than the video frame of the UFO and Cessna tail.)

The sharply focused Sequence #3 UFO does not compare favorably to the out of focus honeybee in *Figure 11, Probable Honeybee and Sequence #3 UFO Comparison*. If the Sequence #3 UFO were a nearby honeybee or bumblebee or hummingbird, it would likely be quite recognizable and it is not. Thus, we conclude that birds or bugs *are not* viable identification candidates for the Sequence #3 and Sequence #2 and probably the Sequence #1 UFOs.

	
A. A crop from a photo taken with a Canon Rebel Ti with a Canon telephoto lens. The insect (probably a honeybee) was taken looking across a field with the "zone of sharpness" (depth of field) being much closer, perhaps in a range of ten to 25 feet. The honeybee is an estimated 50 to 100 feet away, so it is out of focus. The depth of field in telephoto lenses is shallower than the depth of field of more wide angled lenses, such as the Kodak Zx1 has.	B. A crop of frame 15;09 of the Sequence #3 UFO with part of the Cessna's dark and white painted tail sticking up into the cropped frame. Note that the UFO does not look anything like the somewhat out of focus honeybee in A. The UFO was most likely much farther away than the 10 to 35 feet away it has to be if it is actually a bumblebee or a hummingbird.

Source: Allen Jefferson and Keith Rowell

Figure 11. Probable Honeybee and Sequence #3 UFO Comparison

This comparison shows that a bird or bug is probably not the real identification of the Sequence #2 or #3 UFOs, nor probably the Sequence #1 UFO either. Simple visual inspection rules out bugs and birds.

Are Sequence #1, #2, and #3 UFOs Related?

We have plotted some UFO distance curves in *Figure 8, Three Distance Measurements For the Sequence #2 UFO* and *Figure 9, Three Distance Measurements for the Sequence #3 UFO*, and have a general idea of the paths of the UFOs in Sequences #2 and #3. Are they the same UFO? Let's weigh the evidence:

- The UFOs in Sequence #2 and #3 speed past the Cessna. One could suppose, however, that a single UFO is responsible for all three sequence images and that between Sequence #2 and #3 the UFO doubled back and zipped past the Cessna again. The UFO literature does contain numerous stories of the incredible maneuverability of UFOs. But we have no evidence of a maneuver like that here.
- The UFOs in Sequence #2 and #3 appear to be the same general shape (oblong, compact, featureless except for some possible inherent "highlighting" in the Sequence #2 image).
- The plots of Sequence #2 and #3 reveal the same general flight characteristics—speeding along at a constant speed with some possible acceleration at the end in the Sequence #2 UFO.

So, we conclude with the idea that apparently a single UFO approaches the Cessna in the far distance and then in Sequence #2 speeds past the Cessna and either a second UFO appears in Sequence #3 or the same UFO from Sequence #2 "looped back around" and zipped past the Cessna a second time. Take your pick of any of these scenarios, or make up your own scenario consistent with the evidence presented. As always with UFOs, we rarely have a complete and satisfying explanation of events!

CONCLUSION

In this case, there were no witness observations—at least two people and the Cessna pilot—of any anomalous activity during their observation and piloting of the Cessna as it made its practice runs while dropping the package on the target in the field. The only evidence for anomalous activity is one piece of video footage. This was analyzed extensively and supports the initial idea of the person who took the video (Allen Jefferson) that the odd objects in the video were, indeed, odd.

Identification Candidates

The candidates for identification for this (these) low-level, dark, compact, oblong UFO(s) apparently pacing and speeding by a Cessna 152 are the following:

- **Birds.** Birds larger than hummingbirds do not fly as fast in level flight as their distance away has to be given the physical and camera lens parameters. See the *Analysis* section. *Thus, this identification candidate is rejected.*
- **Hummingbirds.** Hummingbirds are a possibility, but they would have to be flying at the top of their flying speed to be a viable candidate, and the images of the UFOs do not look like hummingbirds would look. See the *Analysis* section. *Thus, this identification candidate is rejected.*
- **Bugs.** Bumblebees are a possibility, but a close by bumblebee does not look like the images of the UFOs. See the *Analysis* section. *Thus, this identification candidate is rejected.*
- **Secret U.S. military or foreign power aircraft.** This explanation, of course, can never be completely ruled out by anyone except for the very few within the bowels of our deep black military and corporate contractor world who would also have access to all the on-going projects. This list of people is exceedingly small (perhaps only 100?!) because of the "need to know" and compartmentation of military secrets. However, verified reports of this kind of object over populated areas in the U.S. are far fewer than "standard" UFOs. It is highly unlikely that human-designed, "conventional" secret aircraft would be tested at low level within hundreds of feet of a general aviation airplane over a field in the Willamette Valley. The object(s) in the submitted video is likely nearby but behind the Cessna and around ten feet in size. The flight characteristics of the UFO(s) is well within normal aircraft characteristics, but the shape is not at all. None of the seven potential

witnesses present saw of heard any “secret military craft.” *Thus, this identification candidate is rejected*.

- **Police surveillance UAV.** No city police or county sheriff’s departments in the Willamette Valley area have any operational police surveillance UAVs, much less any that fit the description of this UFO. None of the seven potential witnesses present saw any police surveillance UAV(s). *Thus, this identification candidate is rejected*.
- **Aircraft.** No conventional aircraft, military or civilian, looks like this UFO. None of the seven potential witnesses present saw any aircraft in the vicinity except for the Cessna. *Thus, this identification candidate is rejected*.
- **Helicopter.** No helicopter, military or civilian, looks like this UFO. None of the seven potential witnesses present saw any helicopters. *Thus, this identification candidate is rejected.*
- **Blimp.** No blimp, military or civilian, looks much like this UFO and certainly does not have the flight characteristics. None of the seven potential witnesses present saw any blimps. *Thus, this identification candidate is rejected.*
- **Ultralight.** No ultralight looks like this UFO. None of the seven potential witnesses present saw any ultralights. *Thus, this identification candidate is rejected.*
- **Remote-controlled model aircraft.** No RC model aircraft looks like this UFO. None of the seven potential witnesses present saw any RC model aircraft. *Thus, this identification candidate is rejected.*
- **Balloon.** No balloon in the prevailing weather conditions has the flight characteristics of this UFO, nor particularly the look. Additionally, two balloons would have to have been present. None of the seven potential witnesses present saw any balloons. *Thus, this identification candidate is rejected.*
- **Kite.** No kite looks like this UFO(s) nor would kites have been able to duplicate the evidence adduced in the Analysis section of this report. None of the at least three potential witnesses present saw any kites. *Thus, this identification candidate is rejected.*
- **Hoax.** Neither the witness responses during the course of this case investigation nor the evidence in the video supports a hoaxed video. *Thus, this identification candidate is rejected.*
- **Video Artifacts.** No video artifacts known to this investigator exist to explain the three UFOs seen in this video footage. *Thus, this identification candidate is rejected.*

Since the identification candidates fail for the reasons stated, the UFO evidence in the submitted video and the witness’s additional testimony make this a true UFO, a MUFON UAV.

Appendix A: Pixel Values for UFO Paths Study

Table A-1, Pixel Values and Distances for the Sequence #2 UFO, and *Table A-2, Pixel Values and Distances for the Sequence #3 UFO*, show data values for all 29 frames of the Sequence #2 UFO in Video #1 and all 12 frames of the Sequence #3 UFO also in Video #1. It turned out that a prominent peak was viewable in both sequences so the UFO pixel distance from the peak was chosen as the constant distance comparison to the flight path of the UFO and the Cessna. See under *UFO Paths* for plots of the various UFO to Peak, Cessna to Peak, and UFO to Cessna values.

Table A-1. Pixels Values and Distances for the Sequence #2 UFO

Time	UFO X (pixels)	UFO Y (pixels)	Plane X (pixels)	Plane Y (pixels)	Peak X (pixels)	Peak Y (pixels)	Distance from UFO to Peak (pixels)	Distance from Plane to Peak (pixels)	Distance from Plane to UFO (pixels)
0.03	12	438	156	381	1107	513	1,098	960	155
0.07	43	438	162	380	1086	511	1,046	933	132
0.10	86	437	176	381	1077	510	994	910	106
0.13	132	436	192	382	1065	510	936	882	81
0.17	170	439	203	384	1049	511	882	855	64
0.20	210	436	213	383	1032	509	825	829	53
0.23	246	436	221	381	1010	508	767	799	60
0.27	284	438	231	381	993	508	712	773	78
0.30	321	440	241	380	973	505	655	743	100
0.33	357	439	249	378	953	505	600	715	124
0.37	396	442	262	376	938	502	545	688	149
0.40	434	440	274	374	921	499	491	659	173
0.43	464	442	277	373	892	499	432	628	199
0.47	490	439	278	373	862	499	377	597	222
0.50	523	442	278	371	830	499	312	567	255
0.53	549	442	275	370	795	498	252	536	283
0.57	585	440	279	369	769	495	192	506	314
0.60	623	438	285	366	743	494	132	476	346
0.63	660	435	297	362	714	491	78	436	370
0.67	687	436	281	361	672	492	58	412	413
0.70	720	437	274	360	634	491	102	383	453
0.73	768	438	281	357	607	489	169	352	494
0.77	827	436	294	353	589	485	243	323	539
0.80	890	440	311	350	569	484	324	291	586
0.83	947	445	317	350	540	486	409	261	637
0.87	1008	450	321	349	510	486	499	233	694
0.90	1079	451	333	347	486	483	594	205	753
0.93	1150	454	341	344	460	482	691	182	816
0.97	1227	454	351	341	435	479	792	162	883

Table A-2. Pixels Values and Distances for the Sequence #3 UFO

Time	UFO X (pixels)	UFO Y (pixels)	Plane X (pixels)	Plane Y (pixels)	Peak X (pixels)	Peak Y (pixels)	Distance from UFO to Peak (pixels)	Distance from Plane to Peak (pixels)	Distance from Plane to UFO (pixels)
0.03	77	237	867	463	989	220	912	272	822
0.07	194	233	805	462	973	218	779	296	653
0.10	294	227	737	460	946	216	652	321	501
0.13	382	224	664	458	912	215	530	347	366
0.17	477	215	605	453	888	211	411	372	270
0.20	570	210	540	452	867	209	297	407	244
0.23	642	205	463	450	826	207	184	437	303
0.27	726	166	404	447	800	205	84	464	427
0.30	822	199	355	447	787	204	35	496	529
0.33	933	203	323	449	791	206	142	527	658
0.37	1047	221	294	466	796	220	251	559	792
0.40	1174	247	277	487	814	243	360	590	929