

# What Hit the Pentagon? Misinformation and its Effect on the Credibility of 9/11 Truth

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Version 10. This version strengthens the section on ground effect. It also includes reference to the work of Warren Stutt, who has produced a complete decoding of the official FDR file from American Airlines flight 77. Version 7 included a photograph of debris inside the Pentagon and a calculation of wing loading on the spiral descent of flight AA77. Version 5 included a table showing that a range of flight paths exist which would enable a Boeing 757 to hit the light poles and the Pentagon without experiencing excessive g-force. As some researchers have stated that this is impossible the issue of misinformation arises and is examined in a postscript. Version 4 added the preface to clarify the purpose of the paper and to answer some unfounded criticisms. I am very grateful for the help provided. All significant alterations have been identified and discussed in footnotes.

## Preface

A severe criticism directed at this paper is that it has no hypothesis and is therefore not a scientific paper but an opinion piece. Whether this criticism arises from a hasty reading or a desire to denigrate a conflicting opinion I cannot tell but will assume it is the former and will endeavour to provide clarification. The paper has in fact two hypotheses. These were initially called major and minor hypotheses, but it would be more appropriate to call them social and physical hypotheses. Which one seems more important will depend on the interests of the reader.

The social hypothesis is that various groups within the 9/11 truth movement are strongly asserting contradictory views and thereby weakening the credibility of the movement as a whole. The damage is exacerbated if the supporters of these views not only disagree but also continue to attack one another, as is occurring.

The best way to avoid the development of contradictory views is to scrupulously adhere to the scientific method and to promote to the public only those concepts which are shown to be soundly based. Multiple views will cause confusion which will be apparent to the target audience, the public. Many will conclude that the case for a new investigation into the events of 9/11 is weak if proponents cannot agree on significant issues.

Since the initial version of this paper was published a range of views about what happened on 9/11 has been forcefully presented to me. These include: the official account of the plane strike at the Pentagon is correct; there was no plane at the Pentagon; the plane flew over the Pentagon; there were no planes at the World Trade Center; the planes at the WTC were not passenger planes; the WTC buildings were demolished by nuclear explosives. During this period no-one asserted that the buildings were demolished by energy beam weapons, which may be a sign of progress among activists and, if so, one can be grateful.

It is clear that there is a wide range of views and that some of them are mutually contradictory. It is also clear that considerable hostility still exists. I therefore put it to the reader that the social hypothesis of this paper still stands.

The physical hypothesis of the paper is that there is no proof that a Boeing 757 did not hit the Pentagon. Some critics have denigrated the paper on the grounds that this is not a scientific hypothesis. It is true that in all my previous papers I have taken some evidence, examined it scientifically and produced a positive hypothesis. For example I have looked at the acceleration of the roof of WTC 7, observed that it was extremely close to vertical free fall, deduced that all columns must have been severed simultaneously and hypothesized that only explosives could account for this. In the case of the Pentagon paper I have not made a positive hypothesis. Instead the hypothesis contains two negatives. I contend that this is still a scientific exercise as it permits

testing. I have looked for evidence that a Boeing 757 could not have hit the Pentagon and have not been able to find any that stood up to scrutiny. I further contend that this hypothesis still stands, as is demonstrated in this paper.

## Introduction

The strategy I follow is simple. If asked "What hit the Pentagon?" I avoid answering and turn the discussion to the far more fundamental question "How did it come about that the Pentagon was hit?".<sup>1</sup> It should not have been. It should have been well defended. American Airlines flight 77, a Boeing 757, was the third plane hijacked that day, so there was ample time to confirm that information received was about real hijackings, not parts of war games, and not accidents. There was ample time to send up fighters to intercept, as is the normal procedure.<sup>2</sup>

Crucial to this debate is the video testimony of the Secretary for Transportation, Norman Mineta, to the 9/11 Commission. He entered the Presidential Emergency Operations Center (PEOC) under the White House and saw that the Vice President, Dick Cheney, was already there. A young man came in repeatedly and said to Cheney "The plane is 50 miles out", then "The plane is thirty miles out", and when it got down to 10 miles out the young man also said "Do the orders still stand?" and Cheney angrily confirmed that they did. Shortly after this something catastrophic happened at the Pentagon, causing many deaths. There is little doubt that Cheney had it in his hand to block this attack but had a reason not to do so.

<http://www.youtube.com/watch?v=bDfdOwt2v3Y>

The words used by the young man indicate that those who were following this object on radar did not think it was anything other than a plane.

It is particularly important to note that Cheney later denied to the 9/11 Commission that he was in the PEOC at this time.<sup>3</sup> The most likely inference from this deception is that he wished to conceal his involvement in the unfolding events that morning, thereby exonerating himself at the expense of some other party, that party presumably being the officially designated perpetrators of the attack: al Qaeda, led by Bin Laden. There is no doubt that many Muslims hate America, as former President G. W. Bush stated, and they do so for good reason,<sup>4</sup> however the existence of hatred is not proof that any Muslim group was behind this attack.<sup>5</sup> Cheney's presence in the PEOC during this critical period, together with his denial that he was present, clearly provide grounds for a fresh investigation.<sup>6</sup>

There are now several theories about how the Pentagon was damaged. One is the official description: hijacked AA flight 77 approached at a low angle and high speed, struck light poles, a fence, a generator and a low wall. The plane then struck the Pentagon close to ground level. The outer masonry wall was destroyed to an extent sufficient to allow the heavy parts of the plane to enter and slide into the Pentagon at ground level, between the supporting steel-reinforced concrete columns, many of which were bent and broken.

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<sup>1</sup> Events following the initial publication of this essay confirm that this strategy is effective in creating discussion and providing exposure to evidence. I recommend it to readers.

<sup>2</sup> Timeline: [http://www.historycommons.org/project.jsp?project=911\\_project](http://www.historycommons.org/project.jsp?project=911_project)

<sup>3</sup> Mineta, Bohrer, Clarke, and Cheney himself, confirm his early arrival, quoted by David Ray Griffin. <http://www.globalresearch.ca/index.php?context=va&aid=8788>

<sup>4</sup> Source Watch quotes G W Bush: [http://www.sourcewatch.org/index.php?title=Why\\_do\\_they\\_hate\\_us%3F](http://www.sourcewatch.org/index.php?title=Why_do_they_hate_us%3F)

<sup>5</sup> Bin Laden's FBI wanted poster does not include reference to 9/11. <http://www.twf.org/News/Y2006/0608-BinLaden.html>

<sup>6</sup> The language used here is restrained and perhaps does not indicate the seriousness of this observation. It can hardly be argued that Mineta would have given false testimony to the 9/11 Commission, therefore it appears that already there is a *prima facie* case that Cheney has obstructed the course of justice. If obstruction is found, it is hard to see how investigation of the obstruction would not include consideration of the possibility of treason and murder.

A large number of eye witnesses reported that a plane hit the Pentagon. A substantial proportion of these described a large passenger jet, and a similar proportion stated that the plane hit the light poles.<sup>7</sup> The trail of damage through the support columns to the exit hole was in line with the damaged light poles. If the damage was caused by a plane,<sup>8</sup> the lighter parts that failed to penetrate the wall would have been fragmented and widely scattered by the high velocity impact, as shown by the experiment with an F4 fighter jet.<sup>9</sup> One would therefore expect two types of debris from the 757: larger pieces where the mass of material was sufficient to breach the wall and enter the Pentagon and a modest amount of very small pieces from the lighter outer parts of the wings and the tail fin, which would fall outside.

One of the early alternative theories, promoted by several websites, was that a missile hit the Pentagon. This concept apparently originated from the difficulty in seeing evidence for a sufficiently large entry hole in the outer wall and observation of the remarkably circular shape of the exit hole in the inner wall. The concept was augmented by implausible interpretations of the video clips released to Judicial Watch, as discussed by Peter Wakefield Sault.<sup>10</sup>

Then there is a theory that flight 77 flew over the Pentagon, its passage obscured by the fireball created by an explosion, which would also have caused the observed severe damage. This concept is presented by the Citizens Investigation Team (CIT), as will be discussed later.<sup>11</sup>

There has been heated debate about what hit the Pentagon. At first glance it appears that the 757 could not have hit the Pentagon because there appeared to be too little debris and too little damage at the impact site. It is very attractive to find evidence to support these claims because, if substantiated, it would prove once and for all that the official story about the Pentagon attack is a pack of lies, and many people have tried very hard to do so. Careful examination of the evidence, however, shows that it cannot be proved that no 757 hit the Pentagon. This is of little importance in the overall 9/11 analysis because there is ample physical evidence that explosives were used at the World Trade Centre in controlled demolitions. The demolition evidence is sufficient to prove that the official story is essentially false and that the NIST report, and the 9/11 Commission report, are simply parts of a cleverly and expensively constructed cover-up.

NIST could not have failed to address explosives out of ignorance as they were well versed in old and new explosive technologies.<sup>12</sup> From this we learn that officials are willing to deceive the public about this pivotal event and that skepticism will therefore be appropriate for all related pronouncements. We must remember to be careful however, because effective propaganda is largely true. It has to be; otherwise we would not be taken in by the part that is false.

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<sup>7</sup> Eye witnesses. One estimate is that there are about 89 published reports of witnesses who state that they saw something hit the Pentagon, many stating that it was a plane.

<http://911research.wtc7.net/pentagon/analysis/witnesses.html>. Here is another with 104 saying they saw a plane hit the Pentagon: <http://wtc7lies.googlepages.com/911pentagonflight77evidencesummary>  
<http://www.youtube.com/watch?v=YTNRkb7AaQk&feature=fvw>

<sup>8</sup> It will be too tedious to repeat the supposition denoted here by the word “if” throughout the paper. It is to be assumed in future references to a plane, where applicable.

<sup>9</sup> The F4 experiment: <http://www.youtube.com/watch?v=TVz5vhNvskk>

<sup>10</sup> <http://www.odeion.org/cruisemissile/index.html>

<sup>11</sup> <http://thepentagon.com/>

<sup>12</sup> [http://journalof911studies.com/volume/2008/Ryan\\_NIST\\_and\\_Nano-1.pdf](http://journalof911studies.com/volume/2008/Ryan_NIST_and_Nano-1.pdf)

The first thorough scientific exposition of the evidence for controlled demolition, using explosives, at the World Trade Centre was that of Professor Steven Jones in 2006.

There is now an updated version of this paper:

[http://journalof911studies.com/volume/200609/Why\\_Indeed\\_Did\\_the\\_WTC\\_Buildings\\_Completely\\_Collapse\\_Jones\\_Thermite\\_World\\_Trade\\_Center.pdf](http://journalof911studies.com/volume/200609/Why_Indeed_Did_the_WTC_Buildings_Completely_Collapse_Jones_Thermite_World_Trade_Center.pdf)

A summary of some of the scientific milestones in the development of the explosive demolition theory is presented here: <http://journalof911studies.com/volume/2009/LeggeCDatWTC.pdf>

The views of the author on this subject may be seen at this website:<sup>13</sup>

<http://www.scienceof911.com.au/>

## Discussion

The argument that something other than flight 77 damaged the Pentagon is based on several assertions, all shown to be without foundation:

1. **Too little debris.** There are photographs which show ample small fragments scattered over a wide area. In the photo below, the debris covers the helicopter landing pad, some distance away from the impact site.



Given the density of small fragments observed here on the concrete surface, one can conclude that the many photos which were taken across the lawn would have had a similar density of debris, but the small size of most of the fragments would allow them to be hidden within the texture of the lawn. Also the foreshortening which occurs when the camera is at a distance, and close to the ground, would limit observations. There are, however, some photos which do show a considerable amount of debris on the lawn.

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<sup>13</sup> It appears necessary to draw attention to my overall views as I have been attacked on the grounds that I support the official story about 9/11. Nothing could be further from the truth. The history of my involvement is plain to see at the Journal of 9/11 Studies. <http://journalof911studies.com/>



As a fire hose is running in the above photo it is clear that it was taken early in the event.<sup>14</sup> This provides a clue that some photos which show little debris may have been taken after substantial cleanup had occurred. There are photos which show men in white shirts and black trousers, not ordinary workers, hastily collecting debris from the lawn.<sup>15</sup>

Below is a photograph which has recently appeared, showing a great deal of small debris.<sup>16</sup>



No doubt there will be some who dismiss this photograph on the grounds that it cannot be proved that the debris came from a 757. Such people have failed to understand the logic of this paper. The essential point is that there is no proof that the debris is not from a 757.

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<sup>14</sup> <http://911review.com/errors/pentagon/nodebris.html>

<sup>15</sup> <http://home.comcast.net/~skydrifter/lawn4.jpg>

<sup>16</sup> <http://visibility911.com/blog/?cat=131>

There are also photos which show debris identifiable as the engine rotor, combustion chamber, suspension and wheel of a 757.<sup>17</sup> Some critics express doubt that these pieces came from the Pentagon crash site. Doubts are, however, not proofs.

A point often missed regarding the structure of the Pentagon is that the interior masonry walls in the damaged C, D, E group of rings did not reach the ground, stopping at the third floor. Once the outer wall was penetrated, the interior partitioning would have provided little to restrict the debris from sliding out of sight among the support columns.<sup>18</sup>



In this photo we see a massive amount of debris at the ground floor level. The plane would have passed diagonally from right to left across this scene and we observe that the support columns all appear to have been pushed to the left, as would be expected. In some cases only the reinforcing rods remain.

The authorities released a video purporting to show what hit the Pentagon but it did not do so. The video did, however, show some substantial pieces of debris flying high up in the frame. See it at Judicial Watch, video 1, or click this link:

<http://www.judicialwatch.org/archive/2006/flight77-1.mpg>

You will also see five pieces of debris land and bounce across the road just in front of the camera.<sup>19</sup> Consider the force required to project the pieces so far. If there are similar amounts from here all the way to the impact site there will be a very great number of pieces not previously taken into account. This appears to be a missed piece of evidence for an explosive charge being set off at, or very close to, the moment of impact. The video also shows an intense white flash just before the red fire ball from combustion of the dispersed fuel. This white flash,

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<sup>17</sup> The aerospaceweb article <http://www.aerospaceweb.org/question/conspiracy/q0265.shtml> also points out that a photo of a rotor, which again is consistent with a 757, was presented at the Moussaoui trial.

<sup>18</sup> <http://911review.com/errors/pentagon/punchout.html>

<sup>19</sup> Anyone skeptical of this evidence for an explosion may be basing their view on clips which have been stopped too soon. If in doubt, please check the linked video. Assess the distance the debris is projected.

very different from the fire ball, is further evidence for the use of explosives.<sup>20</sup> Numerous witnesses reported an explosion.<sup>21</sup>

If explosives were used to destroy the plane you would not expect it to make a perfect impact mark on the Pentagon, as happened at the towers, but even if explosives were not used, or used for some other purpose, one would still expect the impacts marks to be very different from the marks on the twin towers due to the very different construction of the buildings.<sup>22</sup>

2. **Hole too small.** The photo most often displayed shows a hole too small to admit a 757, however the lower part of the photo is obscured by water spray from a fire truck. This question has been carefully studied. Jim Hoffman has collated photographs from a number of sources, taken prior to the collapse of the front wall, which show that the entry hole is indeed wide enough to admit both motors and at least the lower and heavier parts of the fuselage of a 757. There are marks visible beyond this. He shows that the damage to the building, to objects in front of the building, and to the light poles, more closely matches a 757 than a smaller aircraft,<sup>23</sup> and certainly does not correspond with damage that a missile might do. It has been argued that the pole damage was faked using explosives or that all five poles were taken away and replaced with poles which were bent and broken. That this could have been achieved without anyone noticing is hard to believe as the area was surrounded by many people, caught in a traffic jam, with their attention sharply focused. No evidence that damage was faked has ever been produced.

It is not surprising that the marks on the wall are hard to see as that section of the Pentagon had recently been reinforced, including provision of windows nearly 2 inches thick (5 cm) of blast proof laminated glass and the brickwork was backed with steel supports and Kevlar.<sup>24</sup> Why was the plane aimed at the reinforced section, which still had few occupants due to the recent renovation? Why did it not hit the relatively weak roof? Would al Qaeda have wanted to minimize casualties? There were auditors in the damaged section who were investigating the loss of trillions of military dollars.<sup>25</sup> Most of the auditors were killed, which has led to considerable speculation regarding motive. Who would wish to kill auditors?<sup>26</sup>

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<sup>20</sup> It has been argued that this video has been tampered with and this has produced the white flash. This is possible but why would the authorities wish to create the impression that an explosion occurred around the time of impact? There are many witnesses who describe a white flash preceding the red fire ball. This link is to a site which describes the appearance of explosions but also contains theories that the author does not support.

<http://web.archive.org/web/20061202230503/eric.bart.free.fr/iwpb/inv2.html>

<sup>21</sup> <http://911research.wtc7.net/pentagon/evidence/witnesses/explosive.html>

<sup>22</sup> It is important to note that the twin tower wall supports were steel columns, covered with aluminium cladding, an ideal system for accepting an imprint. The malleable cladding was compressed between the outer wings and the steel columns. Contrast this with the reinforced masonry wall of the Pentagon: it had no cladding to accept indentation. Little impact mark would be expected in the areas which were not destroyed. Some impact marks were however visible.

<sup>23</sup> <http://911review.com/errors/pentagon/smallhole.html> and <http://911research.wtc7.net/essays/pentagon/index.html>

<sup>24</sup> [http://www.fireengineering.com/articles/article\\_display.html?id=165238](http://www.fireengineering.com/articles/article_display.html?id=165238)

[http://www.architectureweek.com/2001/1003/news\\_1-2.html](http://www.architectureweek.com/2001/1003/news_1-2.html)

<sup>25</sup> Auditors killed. Some have argued that this is a weak point as the amount missing has been revised downwards since. However it would be the amount thought lost at the time that would be relevant to the question of motivation. <http://www.cbsnews.com/stories/2002/01/29/eveningnews/main325985.shtml>.

<sup>26</sup> Some critics have argued that I have erred here and have strayed away from the science-based evidence that I usually adhere to. I point out that I am not using this as proof of anything. I even use the word "speculation" to make it clear that this is not intended as proof. The use of speculation is legitimate if it is to encourage the search for scientific evidence, as is the intention here. Speculation is in fact the normal precursor to research.

<http://911research.wtc7.net/sept11/victims/pentagonkilled.html>

3. **The plane could not have withstood the spiral dive observed.** The angle of bank at times may have been higher than normal for a passenger plane but calculations show that the g-force on the plane, created by the turn, was well within design capability.<sup>27</sup>

4. **The pilot was not competent to perform the navigation or the accurate approach.** There is evidence that the hijackers were more interested in learning to fly than to take off or land. That was suspicious in itself and caused some FBI field reports to be made which were apparently blocked. It is the release of the so called “Phoenix memo” which has exposed the improper actions of the FBI at this time.<sup>28</sup> Michael Ruppert suggests it was Dave Frasca who saw to it that the reports did not get through,<sup>29</sup> thus allowing senior staff to obtain the benefit of “plausible deniability”.

People who assert that the poor flying skills of Hani Hanjour provide proof that the official claim that the 757 hit the Pentagon is false are failing to take into account the possibility that the plane was hijacked by an on-board device, pre-programmed to take over the autopilot. The ability to fly planes accurately without pilot assistance was established well before 9/11.<sup>30</sup> Investigation of the wreckage was carried out by the National Transport Safety Bureau (NTSB), as is usual, however this was not an accident but a crime, hence control was in the hands of the FBI. This organization would not be expected to reveal self-incriminating information, so if a control device had been found we would not expect to learn about it in any official report.<sup>31</sup> There is also no proof that the hijackers named in the official reports were on board. It is therefore possible that they were replaced by more experienced pilots.

It is also reasonable to believe that, with use of a hand held GPS, a poorly trained hijacker could have navigated close to his target. The planes had, after all, been set up in cruise by their original pilots and would presumably have been on autopilot when taken over. If the hijackers had not been wasting training-time learning to land and take off, they could have become reasonably proficient in operating the autopilot, especially if they had focused on the intuitive autopilot mode called Control Wheel Steering (CWS), with which the 757 had been equipped.<sup>32</sup> It may not be too hard to point a plane at a wall with some help from the autopilot.

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<sup>27</sup> In steady level flight wing loading is determined by angle of bank. Bank angle is given by  $\arctan(v^2/(Rg))$  where  $v$  is velocity in m/s,  $R$  is radius in m,  $g$  is  $9.8\text{m/s}^2$ . The sharpest turn, as shown in the published flight path, has a radius of about 3250m. The velocity at this point, according to the FDR, is 270 knots (139m/s). This gives a bank angle of 31 degrees. From wing load tables this gives 1.2g in steady flight, well within the design capability of 2.5g. The NTSB animation shows brief fluctuations in bank, up to about 45 degrees which, if maintained, would give a loading of 1.4g. The legal limit, 2.5g, is not reached until a bank of 66 degrees is achieved. There is no evidence that a bank angle of 45 degrees was exceeded, let alone 66 degrees. Even if 66 degrees had been exceeded briefly, there is no proof that the wing loading had been exceeded, as the loading could have been relieved by simultaneously allowing the pitch to decline.

<sup>28</sup> This is at least criminal negligence and, much more likely, a criminal conspiracy, requiring a new investigation by itself. <http://www.historycommons.org/context.jsp?item=a072701phoenixheadquarters>

<sup>29</sup> Michael Ruppert in his book “Crossing the Rubicon: Decline of the American Empire at the End of the Age of Oil”, and in interviews, names Dave Frasca as having blocked five relevant investigations.

<http://www.larryflynt.com/notebook.php?id=22>

<sup>30</sup> Aidan Monaghan, <http://www.journalof911studies.com/volume/2008/AutopilotSystemsMonaghan.pdf>

<sup>31</sup> [http://www.nts.gov/ntsb/brief2.asp?ev\\_id=20020123X00105&ntsbno=DCA01MA064&akey=1](http://www.nts.gov/ntsb/brief2.asp?ev_id=20020123X00105&ntsbno=DCA01MA064&akey=1)

<sup>32</sup> The remark in the original version of the paper “...it is not hard to point a plane at a wall.” attracted intense criticism. It is important to note that this entire debate about the skills of the hijackers is not relevant to the central issue of this paper as it is possible that the planes were not controlled by the hijackers at all, as stated in the previous paragraph.

Nevertheless we will consider what the hijackers might have been able to achieve. Some pilots have said that it would have been impossible for any of these poorly trained hijackers to have hit their targets. They say that, as speed increases, the plane become increasingly difficult to control accurately, and finally, impossible to control. One thing we can be pretty sure about is that none of these pilots has ever flown a Boeing 757 at the reported speed, 530 miles per hour, as it is well above the legal limit, though there is no proof that a brief excursion to that speed would destroy the plane. We have however the report of John Bursill that he flew a simulator, configured as a Boeing 767, at up to 700 mph and found it was not hard to maintain a steady attitude and direction manually. Unfortunately he



The presumed output of the flight data recorder (FDR) for flight 77, using pressure altitude data, shows a short period on the return leg, and another near the end, in which substantial erratic fluctuations in altitude are observed, as might occur when an inexperienced pilot turned off the autopilot.<sup>33</sup> The record also shows that the controller of the plane performed a descending circuit to lose height, close to the Pentagon, thereby exposing the plane to much greater risk of detection and interception. Both these observations suggest inexpert human control.

While the need for certainty of outcome strongly supports the use of on-board equipment to control the autopilot, the wild motion of the plane when the autopilot was turned off on two occasions, suggests human control. It is of course possible that on-board equipment was programmed to give the appearance of inexpert manual control in order to create the illusion that the plane was controlled by unskilled hijackers, in accordance with the official story.

Whether the plane was flown by hijackers or by a pre-programmed on-board device on 9/11 is still an open question; neither is ruled out by available evidence, but the answer is not essential to the case developed in the conclusion to this essay.<sup>34</sup>

**5. Ground effect would have prevented the 757 from hitting near ground level.** The plane, as it neared the building, was descending at an angle, estimates of which range from 1.5 to 6 degrees.<sup>35</sup> The higher figure is based on the FDR data, using the values of vertical and horizontal speeds at the end of the data publically available at the time, but there are reasons to doubt the validity of this calculation on the grounds that data was missing from the end of the file, as will be discussed later. A normal approach for landing is about 3 degrees.

Anyone who has learned to fly a plane knows that it is essential to pull back on the control column before touch-down. The pilot thus terminates the descent and then holds the plane off the

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did not determine the speed at which altering the attitude and direction would have become difficult.

<http://www.911blogger.com/node/20232> Some have alleged that this simulator could not have been sophisticated enough to handle correctly at this speed. Bursill disputes this, claiming that the simulator was state-of-the-art. Be that as it may, we also know that there are eyewitnesses of flight 77 who confirm the official report that the motors increased power in the last few seconds. This means the plane would have been accelerating and would only have reached the stated speed of 530 mph at or close to impact. If the plane had become uncontrollable in the last few seconds it would also have become impossible to deflect significantly, due to its enormous velocity and momentum. Provided it had been set up correctly some distance back, something very close to the desired impact point would inevitably have been reached. Furthermore it is reasonable to believe that the pilot might have utilized the manual over-ride autopilot mode called Control Wheel Steering (CWS), which had been installed on the 757. Some argue that CWS could not have been used because it had been removed, however the perpetrators could easily have re-installed it. When this mode is turned on the plane does not follow a pre-programmed course but simply maintains heading and attitude. If the pilot sees that a course correction is required he can nudge the control to steer to a new path, which the plane then follows by itself. It is of interest that in the final few minutes of flight 77 we see that the autopilot is turned off and wild variations in altitude occur. Then, for the last minute and a half, a very steady descent occurs, not quite as precise as in a preset autopilot mode but smooth enough to suggest that the pilot may have turned the autopilot back on in CWS mode and that he was adjusting the course, little by little, as the target was approached.

<sup>33</sup> See Figure 2 in <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB196/doc02.pdf>

<sup>34</sup> It is often asserted that the accuracy with which the planes hit their targets is proof that they were not controlled by inexpert pilots. There is a logical fallacy here in that we do not know the exact location of the targets. In the case of WTC 2 the impact is at a steep bank angle, suggesting a late, sharp course correction to the left, and even then the hit was far enough off to the right, apparently, to interfere with the demolition process, as we saw red hot metal pouring out of the building. This give-away obviously could not have been intentional. In the case of the Pentagon, if we assume the damage was caused by a plane, the impact point appears to be substantially too low. It would have been very unwise to plan to fly so low as to hit the light poles and nearly hit the ground. An appropriate target would have been several metres higher. Also, if the plane was intended to hit the reinforced Wedge 1, as the heading of its approach path suggests, it did not aim well as it would have hit the westernmost corner, if properly centered. It appears the precision was not as high as often supposed and the perpetrators were a bit lucky to have been so successful.

<sup>35</sup> The point at issue here, ground effect, has to do with the proximity of the plane to the ground, which remains the same from the poles to the Pentagon, regardless of assumed ground slope, if the height above ground of the impact point on the first light pole hit is used as the reference point.

runway, gradually raising the nose further to maintain lift until speed has declined sufficiently to enable a smooth landing. This is known as the “flare”. Without a flare there will be a very severe impact with the runway. Ground effect is clearly not sufficient to keep a descending plane off the ground in a normal approach.

Lift depends on the “angle of attack”, which is the angle between the effective plane of the wing and the direction of travel. At high speeds the angle of attack required to provide lift is very small. As ground effect also depends on the angle of attack it follows that if the ground is approached at high speed, there will be very little ground effect.<sup>36</sup> Any ground effect remaining could be overcome by using nose-down trim or pushing forward on the control column, or both. It is of interest that in the animation provided by the NTSB we see the control column is pushed fully forward near the end of the flight. Although the heading of the animation is incorrect, as discussed later, there is no proof that this particular piece of data must be rejected. *[Note added January, 2011: The above was written prior to the release of information by Warren Stutt showing that the FDR file contained additional data at the end, not previously decoded. With the new full decoding of the FDR data we see that the period in which the control column was pushed fully forward was near the VDOT antenna tower and indicates the plane steepened descent, setting up the curved course needed to survive the later pull-up.]*<sup>38</sup>

Regardless of the authenticity of the animation, ground effect could not have prevented the plane from striking where it did.

### **Calum Douglas Flight Data Recorder Presentation**

This excellent presentation,<sup>37</sup> was removed from the Pilots for 9/11 Truth website and then from video.google, but can still be viewed here: <http://www.youtube.com/watch?v=Y6oTWgTvdbs>

It shows an animation of data provided by the NTSB, purportedly showing the path of flight 77. The beauty of this presentation is that it includes a complete run of the data from take-off to termination, speeded up for easy comprehension. The data terminates near the Pentagon at an altitude far too high, and coming from the wrong direction, to have hit the light poles and then the Pentagon.<sup>38</sup> The path is to the north of the Citgo service station. For the plane to have a chance of creating the observed damage the path would have to be much lower and pass to the south of the service station. The animation shows the path is mostly smooth and therefore consistent with a plane flying on autopilot, but there is a short section on the return leg, and another near the end, in which there are wild variations in altitude, which appear to correspond with the deviations in the pressure altitude graph already mentioned. During these periods erratic variations in bank angle also occur.

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<sup>36</sup> Karl Rader, in his article *Ground Effect: It's not a Cushion, it's an Effect of Lift Creation*, includes diagrams apparently roughly copied from the FAA's Pilot's Encyclopedia of Aeronautical Knowledge. The graph of lift coefficient versus velocity shows that the extra lift obtained due to ground effect, close to the ground, diminishes as angle of attack is reduced and disappears altogether at zero angle of attack. Previous versions of this paper omitted this information. [http://www.911myths.com/Ground\\_Effect.pdf](http://www.911myths.com/Ground_Effect.pdf).

<sup>37</sup> Calum Douglas's presentation in London, dated 18 June 2007, provides a thorough analysis and appears logical in all major details but one. He is sure that the damage at the Pentagon was done by “some sort of aircraft” but finds a conflict in that a 757 should have knocked over some spools on the lawn, seen in a particular photograph which he shows. Jim Hoffman appears to have resolved this by pointing out that photographs from a different angle show the spools were far enough away from the building that the plane would have passed above them. <http://911research.wtc7.net/essays/pentagon/index.html#surroundings>

<sup>38</sup> Note: This paper has now become dated as much new information has become available recently. Important is the work of Warren Stutt who found data at the end of the FDR file which had not previously been decoded. The CSV file shows the flight finishing 1 second prior to impact, and too high to create the observed damage. The new decoding resolves this question as it provides the missing data and shows that the timeline in the CSV file had been moved 4 seconds, thus obscuring the fact that data was missing, as previously suspected. A paper on this has been peer reviewed and published at the Journal of 9/11 Studies. This paper shows that the FDR course leads to impact with the Pentagon at the known impact point.

[http://www.journalof911studies.com/volume/2010/Calibration\\_of\\_altimeter\\_92.pdf](http://www.journalof911studies.com/volume/2010/Calibration_of_altimeter_92.pdf)

Douglas reports that concerns about this clearly erroneous flight path led to further requests to the NTSB, resulting in receipt of a raw data file, supposedly direct from the FDR, and a decoded version as a CSV file. This data shows erratic behavior similar to the animation, but conflicts with the animation in that it shows the plane coming in at a different angle, to the south of the Citgo station. The CSV version of the data still terminates too high to have hit the Pentagon. John Farmer has analyzed this data thoroughly and has concluded that the data finishes 4 to 6 seconds before the impact time.<sup>39</sup> If this were true it would mean that for nearly a mile there was no information about its speed, course or altitude. Due to this uncertainty it could not be scientifically proved that the CSV file rules out impact by a 757.

The odd thing about the animation is that, while it shows the plane flying north of the Citgo station, the compass shows a 70 degree heading, as in the CSV file.<sup>40</sup> This would place it south of the station, and very close to the path indicated by the pole damage. It appears therefore that the animation has been incorrectly calculated from the data. The question arises whether this was deliberate to cause confusion, or an accident. It certainly has caused a great deal of argument among well meaning investigators of the 9/11 evidence.

### **The Over-fly Theory**

A plane on either of the paths portrayed in the animation or the CSV file, could not have produced the observed damage to the Pentagon, as they terminate too high. The idea that the plane may have flown over the building may therefore occur to the reader. If this were the case a new theory must be created to explain all the observed damage. This includes the straight line of damage from five light poles to the exit hole in the C ring. On the way there is damage to a fence and a trailer-generator. At the face of the Pentagon the damage is consistent with a 757, as previously explained. Within the Pentagon is a huge amount of debris along the damage trail, with no evidence to suggest how it could have appeared, if not from a large plane, and outside the Pentagon there appears to be sufficient small debris.

The over-fly theory is currently presented by a two-member group known as the Citizen Investigation Team (CIT),<sup>41</sup> who do not rely on the FDR data to establish the altitude of the plane. They base their opinion on interviews with a number of eye witnesses who say that the plane passed to the north of the Citgo service station. None of the eyewitnesses describe the steeply banked right turn that would make it possible for a plane on the north side to reach the impact point on the Pentagon and it would have been impossible to make the following steep left turn and leveling necessary to line up with the light poles and then create the clearly defined directional damage. The north path and the official path are therefore mutually exclusive.

It is part of the CIT theory that the view of the departing plane was obscured by the effects of an explosion which also damaged the Pentagon. While an explosion might have obscured the view from observers in line with the approach path, there would have been many potential observers with a clear view from different directions. In particular, the view over the roof of the Pentagon from the elevated road to the south would be very likely to produce numerous eye witness reports. Given the failure of such a body of reports to arise, while there are many witnesses reporting the plane hitting the Pentagon, including some who thought the plane passed north of the Citgo station,<sup>7</sup> it is not surprising that this theory, which is at present gaining supporters, has

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<sup>39</sup> John Farmer's file: [http://911files.info/ntsb/Final Analysis of NTSB Fight Data Recorder Freedom of Inform.pdf](http://911files.info/ntsb/Final%20Analysis%20of%20NTSB%20Fight%20Data%20Recorder%20Freedom%20of%20Inform.pdf), can no longer be found. The relevant conclusions have been summarized here:

<http://arabesque911.blogspot.com/2009/07/misinformation-flight-77-flight-path.html>. See also reference 38 which discusses Warren Stutt's findings. He shows that the FDR data, when properly decoded, does not conflict with the official account.

<sup>40</sup> Look for the compass heading at the right hand edge of the animation screen to confirm this observation.

<sup>41</sup> <http://thepentagon.com/>

received criticism. There appears to be no scientific reason to prefer the CIT eyewitness reports over the very many conflicting reports.<sup>42</sup>

## Review of Course Theories

At this point there are two data sets and the official explanation setting out specific courses for the plane as it approached the pentagon. There is also the CIT overfly theory, based purely on eye witness reports, that the plane passed north of the Citgo service station. If we rule out the animation on the grounds that its course is apparently the result of a conversion error, there remain three theories which are all mutually contradictory. As they are contradictory, logically no more than one of them can be correct. [*Note added January, 2011: The new decoding of the FDR file by Warren Stutt shows the plane descending smoothly, pulling up safely and striking the Pentagon near the ground. The file is thus no longer in conflict with the official account of the path of the plane. There are therefore only two courses in conflict to consider: the official course and the CIT overfly theory. This leads to some awkwardness in writing this version. I have left the original text in place as far as possible, and have made comments and adjusted the footnotes where appropriate. We also know now that the timeline of the CSV file had been adjusted, giving the impression that the truncated data finished close to the Pentagon, leading to false conclusions about whether a safe descent was possible. This information should be borne in mind while reading the following.*<sup>38</sup>]

Pilots for 9/11 Truth is careful to point out on its website that it does not make the claim that no Boeing 757 hit the Pentagon.<sup>43</sup> This team has done a great deal of valuable work in obtaining files from the NTSB and in having the data interpreted. They show that the FDR data has the plane passing over a tall VDOT antenna to the south of the Navy Annex. The team calculates that, even if the height of the plane, as shown in the data file, is ignored and the plane is assumed to come in as low as possible over the antenna, it will still be impossible for it to pull out of the dive necessary to descend to the light poles. We must conclude from these calculations that if a plane flew over the antenna at the stated speed, and descended to the light poles in the manner assumed by Pilots for 9/11 Truth, it would have crashed and could not have done the observed damage. There are, however, a number of reasons why it is prudent to distrust this conclusion.

Firstly we consider the FDR data file. Given that officials have lied about the use of explosives at the WTC, why would they not lie by manipulation of the data file? What better way would there be to confuse investigators than to provide a file which had been “adjusted”? The adjustment might be as simple as removal of the last few seconds of data, then adjusting the timeline throughout to obscure the deletion.<sup>44</sup>

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<sup>42</sup> <http://911research.wtc7.net/essays/pentacon/index.html>. CIT asserts that their interviews with people who report that the plane passed to the north of the Citgo service station provide definitive proof that the plane could not have done the observed damage. Why their interviews should be given more weight than the randomly collected interviews reported earlier showing the plane flying straight into the Pentagon is not clear. Indeed the fact that all the CIT witnesses report that the plane passed to the north of the Citgo station gives reason to suspect that they are not random but cherry-picked. Sgt Lagasse is a witness used by CIT to support their flyover theory. Here he asserts that the plane did not overfly but hit the poles and the Pentagon: <http://www.apfn.net/messageboard/6-27-03/discussion.cgi.98.html>. Here is an analysis of reports mentioned in footnote #7. 89 reports were of “an object” hitting the Pentagon. Of these, 45 stated that it was a large plane and 17 stated that the plane hit the light poles. <http://www.911research.wtc7.net/pentagon/analysis/witnesses.html>.

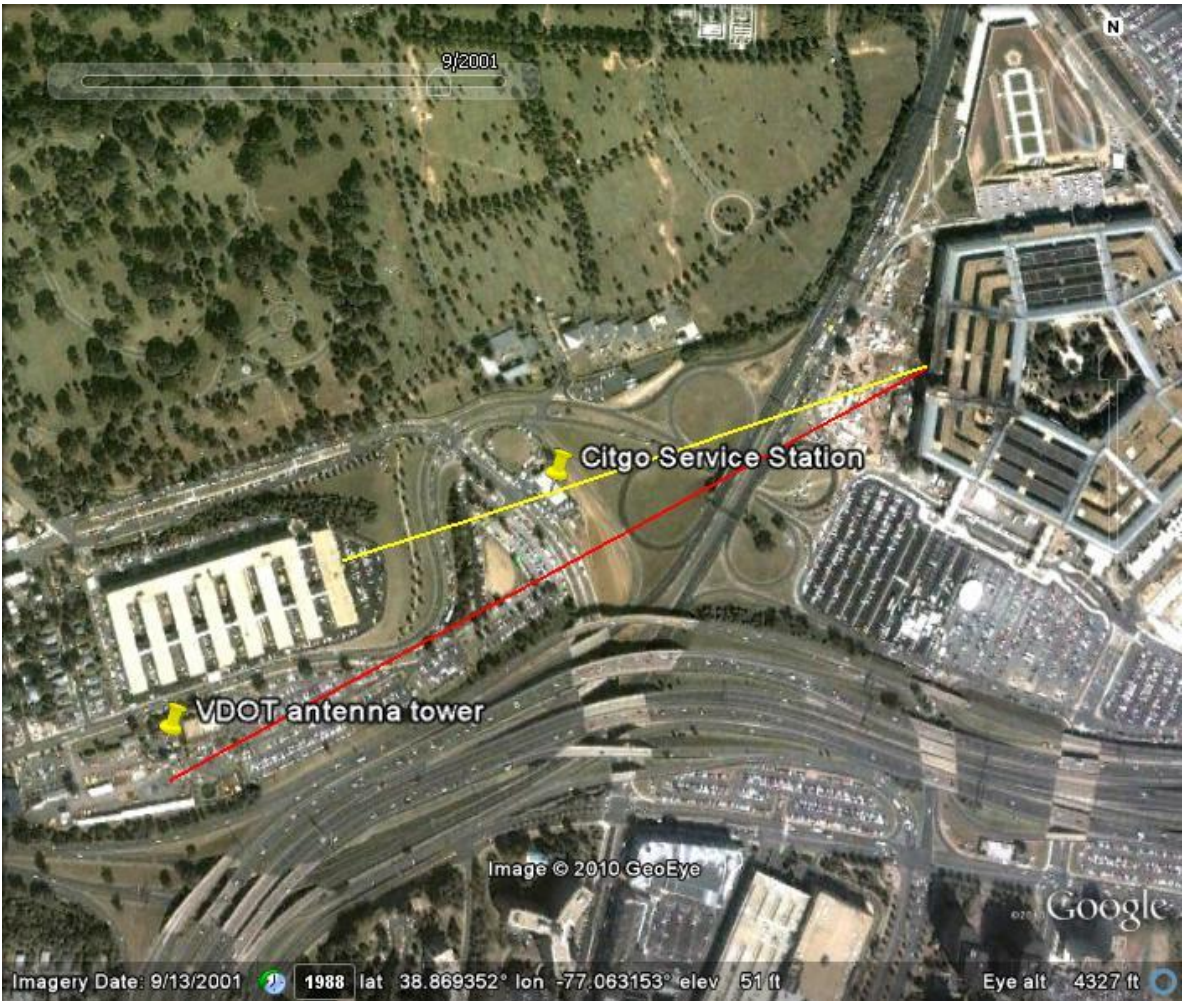
<sup>43</sup> Pilots for 9/11 Truth disclaimer re what hit the Pentagon. [http://pilotsfor911truth.org/article\\_corrections.html](http://pilotsfor911truth.org/article_corrections.html)

<sup>44</sup> In a previous version the need to obscure the deletion by adjusting the timeline was not considered. Simply adjusting the timeline appears to avoid the complexity that would be required to keep all related inputs consistent with one another if altitude adjustments had been made. [*The new decoding shows that the timeline had been adjusted in the CSV file. It is not asserted that data was deliberately removed and the timeline adjusted in order to deceive. What is asserted is that the Authorities must have known that the final height and descent rate recorded was evidence that data was missing. Their silence on this issue is culpable.*]

The CSV data is presented as terminating one second short of the supposed impact time, with the plane far higher than the Pentagon and hence totally out of reach of the observed damage trail. If the data has been truncated, how do we know exactly where the plane flew? Can we be sure it passed over the VDOT antenna? Is it possible to find appropriate paths to the side of the antenna? Are there obstacles to the south of the antenna?



This view is approximately in the direction of the Pentagon. We see that a path to the right of the VDOT antenna would pass over a low lying, relatively open, service area. In the next image, which shows a red line drawn from near the VDOT antenna to the Pentagon, we again see the service area and find that the path would continue on unobstructed over a car park.



Perhaps the line passes over some trees. Do we know how tall the trees were in 2001? Could the plane have passed through the tops of trees? It certainly continued on after hitting the tops of light poles, much sturdier than the tops of trees. [Note added January 2011: The yellow line indicates the line of sight of Albert Hemphill who repeatedly asserted that the plane passed over his right shoulder straight to impact with the Pentagon.<sup>45</sup> His line of sight from the Navy Annex passed over the Citgo service station, hence he was in the perfect position to determine which side of the service station the plane flew. Had the plane passed north of the service station he would have said it passed over his left shoulder. He also said “It was as though it had come up Columbia Pike” which is on the south side of the Navy Annex.]

It is clear from the above that there is scope to plan a flight path considerably lower than the top of the VDOT antenna, on its south side. The descent required would be less, hence the change in descent angle would be less, reducing the required g-force.

For example, if the plane passed by the antenna 30 ft above the ground, maintaining a descent angle of 2.0 degrees, it would hit the top of the first pole and the impact hole in the Pentagon without requiring any pull up at all, as the path is a straight line.<sup>46</sup> This suggests that if the pilot, or controlling device, was allowed to pull up with a reasonable g-force, it would be possible to find a curved flight path that passed well clear of the ground near the antenna and also allowed contact with the first pole a few feet below its top, in accord with the photographic evidence of pole damage. It remained to determine whether adequate ground clearance would exist between the antenna and the poles. I therefore studied various possible flight paths and find there is, as I had suggested in previous versions, a range of paths with adequate ground clearance which would allow the plane to do the observed damage while not experiencing severe g-forces. These are set out in the Postscript below.<sup>47</sup>

The more we look into this issue, the clearer it becomes that there is no scientific evidence on which to base the claim that the 757 could not have hit the light poles and the Pentagon.

How then is it possible that such a range of views should exist about how the damage was done at the Pentagon? The answer is that a range of views will arise naturally if conflicting evidence is presented, as has occurred.

### **Inferences from Contradictory Evidence**

Much time has gone by since 9/11 and it would have been very easy for the authorities to provide clear evidence to answer the question “What hit the Pentagon?” and set our minds at rest. A useful perspective is to consider the attack on the Pentagon as if it were a stage play. On the stage we, the audience, have seen actors playing parts in a mystery thriller, full of convincing details. We speculate at length on the clues as we enjoy a glass of wine after the show. We

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<sup>45</sup> It seems a pity to miss the chance to add Albert Hemphill’s vantage point and line of sight to the image used in the previous versions. In an interview years later Hemphill repeatedly insisted that the plane passed over his right shoulder, as in his original testimony, but also said it passed over or a little to the north of the Citgo service station, which is contradictory. Had he been at his previous vantage point at the time of the interview he obviously would have said the plane passed to the south of the service station. It is clear that only a south path fits in with his testimony. <http://s1.zetaboards.com/pumpitout/topic/3369020/1/>

<sup>46</sup> Assumptions: (all in feet) ground level at VDOT antenna, 135 ASL; pole top, 80; impact on Pentagon 44; Pentagon to the pole, 1016; Pentagon to antenna, 3416. It had been my hope that this suggestion in a previous version of the paper, and in email correspondence, would have indicated to Pilots for 9/11 Truth that it would not be hard to find paths which would allow the plane to hit the poles and the Pentagon with little stress. I hoped this would lead to discussion regarding revision of their position. Regrettably this was rejected.

<sup>47</sup> The postscript shows that the work of Pilots for 9/11 Studies is flawed in that they argue that the FDR file proves the plane impact theory wrong. They ignore the logical alternative possibility that the plane’s path proves the CSV version of the FDR data to be faulty.

realize that the question of the identity of the criminal was skillfully obscured. Next day the media critics give the author high praise for successfully tantalizing us right to the end.

The most logical inference from the Pentagon attack evidence is that the perpetrators of 9/11 knew that there would be many members of the public who would become suspicious for various reasons. The perpetrators realized that a powerful technique for weakening the impact of the skeptics would be to have them arguing against one another. Like a skillful playwright they balanced contradictory evidence to keep the public guessing. On cue the media critics gave the blatantly false NIST report<sup>48</sup> high praise and we were left guessing about the actions, motives and identity of the people behind the curtain.

### **The Precautionary Principle**

As stated above, the authorities could easily show what hit the Pentagon. They may have several video tapes of the event. They also have the debris from the attack, many pieces of which will have serial numbers and other means of exact identification. That they choose not to provide this information must be because confusion serves their purpose.

The situation to bear in mind is that the perpetrators may be keeping evidence in reserve for an additional specific purpose. Evidence that proves that a 757 did hit the Pentagon would function as their insurance policy. If they feel endangered by the progress of public opinion toward demanding a new investigation, and realizing that this will likely lead to criminal charges and convictions, they will produce this evidence. As many members of the 9/11 truth movement believe that no 757 hit the Pentagon, this evidence will throw the movement into disarray and create substantial loss of credibility over issues which are far more important. It will become much more difficult to argue our prime evidence convincingly, that explosives were used at the WTC demolitions.<sup>49</sup>

Those who are not of the opinion that a 757 hit the Pentagon should bear in mind that it is possible that they have been deliberately deceived by false evidence and have been set up by this evidence to serve the purpose of the perpetrators, when the time comes. Application of the precautionary principle would result in investigators taking care to avoid publicly asserting that the 757 did not hit the Pentagon.

The motive for this essay is the hope that promotion of the precautionary principle will make this damaging scenario less likely to occur and, if it does occur, will provide some protection from its effects.

### **Summary and Conclusion**

The evidence regarding what hit the Pentagon is contradictory. It is very likely that contradictory evidence has been deliberately provided. There are some who assert that there was not enough debris for a plane crash and that a plane could not have penetrated as far as the observed damage indicates, however the plane would only have had to destroy part of one wall for most of its fragmenting material to be able to slide among the support columns. There is photographic evidence of a massive amount of debris within the Pentagon and no explanation of how it might have got there if not from a plane. There are photos of plane parts that are undeniably from a 757, however they could have been planted. There is evidence of a powerful explosion which

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<sup>48</sup> Anonymous and F Legge, Falsifiability and the NIST WTC Report: a Study in Theoretical Adequacy: <http://www.journalof911studies.com/volume/2010/Falsifiability.pdf>

<sup>49</sup> A substantial and growing proportion of the 9/11 truth movement members believe that the 757 did not hit the Pentagon, thus the first step of the case made here is already in place – it is as if the premium on the “insurance policy” of the perpetrators has been paid and they can claim on the policy when they feel the need. Regrettably several significant figures in the truth movement have provided endorsement of the work of CIT, and this list is growing.

may have changed the structure of the plane and its impact marks. If a 757 did not hit the Pentagon, an extremely complex process must have been involved in making these marks and damaging the light poles.

There are three<sup>38</sup> competing and contradictory stories about the flight path of the plane. The official flight path cannot be scientifically refuted by the available evidence. How are we to deal with this uncertainty and confusion?

**There are two essential points to note:**

**1. Nothing should have hit the Pentagon. This implies that a stand-down order existed, as appears to be confirmed by Mineta's testimony to the 9/11 Commission.**

**2. The authorities could easily show us what hit the Pentagon but they do not. This implies that the provision of contradictory information is deliberate and has a purpose.**

**These provide *prima facie* evidence that the official explanation of the event at the Pentagon is partly false and that a cover-up exists.<sup>50</sup> This is more than sufficient to demand a new investigation, regardless of what hit the Pentagon.**

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<sup>50</sup> Due to the position taken by some critics of the original paper it is necessary to point out that if one accepts that the damage to the Pentagon was caused by flight 77, as stated in the official reports, this is only part of the official story and does not mean that one accepts the rest of the reports. It is logically false to assert that acceptance of the 757 impact is to retreat from MIHOP (made it happen on purpose). Page 2 of this paper, and my website, <http://www.scienceof911.com.au>, make my position on this quite clear.



## Postscript

This postscript should not be interpreted as an attack on Pilots for 9/11 Truth. It is offered as an illustration of the fact that people and organizations may inadvertently become attached to an incorrect concept, which leads to false conclusions. The members of this organization as a whole are clearly well intentioned as they “... *ask for a true, new independent investigation into the events of 9/11*”.<sup>51</sup>

The attack on the Pentagon was certainly surprising in a number of ways. One of the most bizarre features is the impact point, with the plane almost touching the ground. It is highly unlikely that such a low impact point was intentional as it would incur a probability of collision with the ground close to 50%, due to inevitable control inaccuracy.

It has been pointed out by Rob Balsamo, of Pilots for 9/11 Truth, that: “*A pilot points the nose where he wants the airplane to go.*”<sup>52</sup> We can deduce from this that a pilot on a suicide mission would normally point the nose of the plane at his target. It is therefore surprising that the plane approaching the Pentagon was aimed low enough to hit the light poles. How this came about we will probably never know but we must deal with the consequences of this fact in a mathematically correct manner.

To pursue the issue raised in this paper, that flight paths may exist which could produce the observed impact damage, I prepared a spreadsheet which allowed insertion of various assumptions about impact and obstacle locations. The spreadsheet was designed to calculate initial descent angle, g-force and ground clearance. A pilot in a difficult situation would wish to apply corrections as early as possible in order to minimize g-force. I therefore chose a flight path which was circular in a vertical plane, as this would provide a uniform and minimal g-force throughout the entire arc from the obstacle to the Pentagon. A circular flight path is close to optimum as the descent angle in this case is never steep enough to significantly alter the vector values. It is also convenient as it is very easy to calculate a circular path, using basic equations, if we can locate three points on the arc, as is possible with the Pentagon attack.

A similar calculation has been provided by R. Mackey, who used a parabolic path. This would produce an accuracy similar to the circular path and showed that a low g-force path was possible.<sup>53</sup>

Some Google searching will reveal that problems with the Pilots for 9/11 Truth calculations have been discussed previously. In 2008, Myriad explained in a post on the James Randi Educational Forum that there was a visually obvious flaw in their diagram. This flaw would result in underestimating the radius of curvature and hence overestimating the g-force.<sup>54</sup> He went on to show, using proprietary software, how to work out g-force in a circular model.<sup>55</sup> He obtained

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<sup>51</sup> See the home page: <http://www.pilotsfor911truth.org/>

<sup>52</sup> Personal communication.

<sup>53</sup> Mackey, R. March 2008. <http://forums.randi.org/showthread.php?t=109066> It could be that this work was ignored by the truth movement because Mackey is known to support the official story of 9/11. This does not, however, prove that this particular calculation is wrong.

<sup>54</sup> There may be no previously published peer reviewed paper showing calculation of the g-force which a plane would be subjected to if the pilot was allowed to choose the most favourable path toward the light poles and the Pentagon, but there have been a number of serious discussions on blogs, which should have alerted Pilots to review their position. Googling terms like vdot, pentagon, parabola will locate heated mathematical discussions. For example <http://forums.randi.org/showthread.php?t=123859>. A post by Myriad in this thread clearly sets out the reason why Pilot's calculation of g-force works out wrong. As this is dated 15 Sep 2008, 6:25 PM, ample time for correction has elapsed. He makes a small error in calculating the descent angle but his argument is correct (it is after all a blog, not a peer reviewed paper).

<sup>55</sup> Myriad, 15 Sept 2008, provides a similar result with a circular model at 8:18 PM. Note that he used an impact point at the top of the first pole whereas I used a point about 10ft from the top to match the observed damage, which would affect the result. He obtained 1.65g: I got 1.8g. <http://forums.randi.org/showthread.php?t=123859>

exactly the same value for radius and g-force as I do when I use his inputs. I am therefore confident that my spreadsheet is working correctly.

The findings from the spreadsheet are set out in the following table. The assumptions are that the impact was 30ft above ground on the first light pole and 12ft above ground at the Pentagon and that the plane was traveling at 530mph. The values listed under g-Force are Relative Centrifugal Force, as calculated, plus 1 for gravity. All the paths shown could be followed safely as the plane is rated to 2.5g. *[Note added January, 2011: Subsequent investigation has shown that the ground elevation at pole 1 was higher than assumed in preparing this table. In all cases the g-forces are now found to be less than shown here and the ground clearances greater, hence the paths are easier to fly.<sup>38</sup> The highest value of the g-force found in the FDR file is very briefly 2.26g, safely below the maximum design value, 2.5g.]*

The top row of the table is the result of an experiment to determine how high above the antenna it would be possible to fly and still produce the observed damage. It turned out that the limit was not the g-force but the ground clearance near the Pentagon.<sup>56</sup> The top row is not offered as a reasonable path, though it seems an expert should be able to perform it.

<b>TABLE of PATHS</b>	g-Force	Angle	Clearance	Radius
	(g)	(deg)	(ft)	(ft)
<b>VDOT antenna clearance</b>				
125 ft	2.35	13.5	90	13910
20 ft	1.88	9.3	57	21222
0 ft	1.80	8.5	50	23617
<b>Ground clearance, passing to the south of the antenna</b>				
120 ft	1.57	6.5	34	32716
90 ft	1.44	5.3	25	42886
<b>Navy Annex clearance, passing to the north of the antenna</b>				
60 ft	2.29	10.4	43	14550
20 ft	1.99	8.3	29	18999

The column labeled “Angle” shows the descent angle at the moment the calculated path was commenced. Study of the topography using Google Earth shows that the closest approach of the plane to the ground between the antenna and the first pole would occur about half way. This is shown in the column labeled “Clearance”.

As all these paths show a g-force substantially below the rated capacity of the plane we see that the pilot would not have to follow the arc exactly; there is scope to pull up a useful amount if an obstacle like a tree appears. My preferred path would be to pass by the antenna on the south side, about 120ft above ground, which provides ample ground clearance. It requires an entry angle of 6.5 degrees. This is only about twice the normal approach angle for landing of commercial aircraft and would not be difficult. It is interesting that this entry angle is close to the final decent angle in the CSV version of the FDR data. This suggests that the data may have been truncated close to the antenna, the point where this final arc would have been entered, with corresponding adjustment of the time line to delay the last reported data to just prior to the moment of impact.

<sup>56</sup> If the centre of the circle is east of the face of the Pentagon the plane must be descending and cannot hit the ground near the Pentagon. If west, ground impact is possible and flight paths must be rejected even if the g-force is acceptable.

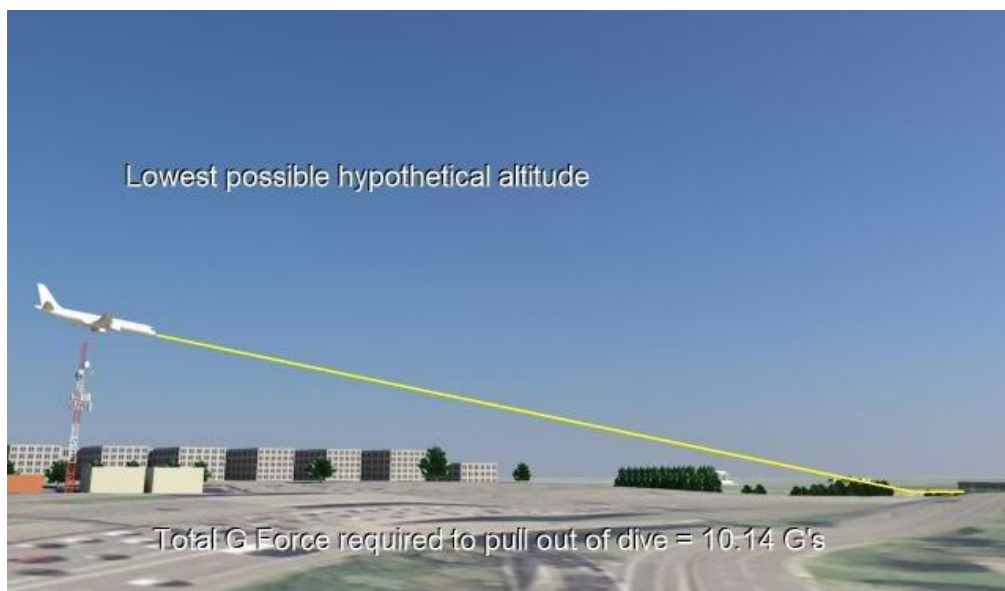
We see that a higher course, going over the antenna, the course which has caused so much controversy, would be feasible. We also see that a course over the Navy Annex seems reasonable,<sup>57</sup> which is of interest as it corresponds with reports of some witnesses.<sup>58</sup>

On the website of Pilots for 9/11 Truth we read: *“Physically and aerodynamically, Arlington's unique topography and obstacles along American 77 "final leg" to the Pentagon make this approach completely impossible as we will demonstrate”*.

At 10 minutes into their G Force video<sup>59</sup> we hear: *“As we can see, G loads required to pull out of a dive from the top of the VDOT antenna are impossible for a 757”*.

Given that it is clearly possible to find a flight path that does not stress the aircraft, with an entry angle that would not stress the pilot, one wonders how it comes about that Pilots for 9/11 Truth have produced such a contrary finding. The answer is readily found.

We see in the following image that the path they assume for the plane is a straight line from the top of the VDOT antenna to the first light pole. The plane is thus required to confine its pull up to the very short vertical distance from the impact point on the pole to the ground.



Firstly, there is no consideration that the course may have been a few feet to one side or the other of the antenna, thus permitting a lower, and hence less stressful, entry than depicted. Secondly, there is the assumption that the pilot would be stupid enough to maintain a constant descent angle from the top of the antenna all the way to the impact point on the first pole before pulling up.

My calculations show that the force required to avoid collision with the ground, following this hypothetical straight line descent to the first light pole, would vary widely, depending on the assumed height of impact with the pole. At 20ft up from the ground it would be 7.5g; at 30ft up it would be 4.6g. The lower estimate is nearly twice the legally permitted force and very likely to

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<sup>57</sup> Errors in a previous version regarding the calculations for the Navy Annex have been corrected. As the g-force is still low the argument does not change. Assumptions used: ground level, 145ft ASL; building height, 77ft.

<sup>58</sup> For example: *“Defense Protective Service officer Mark Bright is manning the guard booth at the building's mall entrance when the oncoming jetliner pops up low over the Navy Annex, only a few hundred yards away. Watching it knock down streetlights, he knows it is going to hit the building. Just before it does, Bright hears the plane power-up.”*

<sup>59</sup> G Force video: [http://pilotsfor911truth.org/descent\\_rate031308.html](http://pilotsfor911truth.org/descent_rate031308.html)  
Transcript: <http://www.abovetopsecret.com/forum/thread506477/pg1>



Pentagon, as quoted above, is self-contradictory. To hold that the plane did not hit the Pentagon is to adopt the only remaining position, namely that it flew over the Pentagon. This would appear to be an uncomfortable position for a team which has done much good work to obtain and analyze the FDR data files.

Members of Pilots for 9/11 Truth have had several years to address these concerns, but so far have not shown themselves to be willing to consider doing so. Whether this represents the position of the majority of members, or just the executive, is not clear.<sup>60</sup> It appears likely that the majority of members have not carefully examined the claims in their own website.

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<sup>60</sup> There appears to be at least one member of Pilots for 9/11 Truth who is of the opinion that the FDR data was flawed and that a substantial plane hit the Pentagon. It is Snowygrouch (Calum Douglas):

<http://www.911forum.org.uk/board/viewtopic.php?t=5328>

<http://forum.keypublishing.co.uk/showthread.php?t=64044>