

EXHIBIT 24 - EYEWITNESS ACCURACY PROBABILITIES

By Michael Hull - Article provided for use by Cmdr. Donaldson and may be reprinted by others.

I would like to offer you some statistical calculations on the probabilities that can be assigned to the accounts of the TWA 800 eyewitnesses. In a December 15, 1996 article in the NY Times entitled "Many Answers in Crash Except the One That Counts" it is stated that: "safety board officials said their leading theory of the crash is that the fumes were ignited by a spark of static electricity created by fuel leaking into the tank. But they offered no evidence to support that theory and, in fact, they could not rule out a bomb or missile as the cause of the explosion -- two other possibilities for which there is no evidence."

Statistical calculations on the probabilities can be assigned to the accounts of the TWA 800 eyewitnesses. Granted, to date, there may have been no "physical" evidence found for a missile or rocket, but the NTSB should not discount the eyewitnesses' evidence that a streak of light rose towards the aircraft prior to its destruction. In the article it is indicated that 40 of these witnesses are considered to be "reliable" and include a pilot and a military officer. What statistical reliability can we place on this evidence provided by eyewitnesses?

If one assumes that a "reliable" witness can report an observation correctly in only one out of five observations, then there is only a 20 percent probability that an event reported by such a witness would have actually taken place as described. With two of these witnesses independently describing the same event, the probability rises to 36 percent and with ten witnesses it rises to 89.26 percent. With forty such independent and similarly "reliable" witnesses the probability rises to 99.99 percent that the event reported did indeed take place. This is as close to certainty as one can come mathematically. Further, even if one assumes that the reliability of these 40 "reliable" witnesses was so poor that each of them could report an observation correctly only one time out of ten, the probability that the event did indeed take place as described by the witnesses is still 98.52 percent.

The equation is as follows:

Probability of Event (P) = $[1-(U^N)]$ where U is the Unreliability of the system and N is the number of participants.

For example: If you give a coin to one person and ask them to flip it and you hope to see a "head", what is the probability that you will get it? Answer 50%. What if we give two people a coin each and ask both to flip their coins and we hope to have one "head" show up, the probability that we will get it is now 75%. With three people the chances that we can get at least one head is 87.5% and with four people it is 93.75%.

Another way to look at these probability outcomes is as follows:

Assume that one has identical pieces of equipment which need to operate for a set period of time, but each can do so with only 50% reliability. How many pieces of equipment do we need to operate simultaneously to ensure with 99.9% probability that we will get the job done? Answer 10.

Now if a witness is "right" in an observation only 10% of the time (or another way of putting this is that the witness is unreliable in 90% of his observations) then if one had 50 such witnesses what is the probability that what they said happened, actually happened? The solution table is shown below: Accuracy of Witness Groups at Ten Percent Reliability:

No of Witnesses	Probability that Event Happened
1	10.00 % (N=1 and U=0.9)
5	40.95 % (N=5 and U=0.9)
15	79.41 % (N=15 and U=0.9)
20	87.84 % (N=20 and U=0.9)
35	97.50 % (N=35 and U=0.9)
50	99.48 % (N=50 and U=0.9)

In the search for 'likely scenarios' of what caused the TWA 800 crash, the probability that the center tank explosion was linked to the streak of light, as reported by the eyewitnesses, has more support than speculation by the NTSB on static electrical charges, leaking fuel lines, and air conditioning units warming fuel in the tank to explosive limits.