

## NOTES RE 25 JULY 1957 NIAGARA RADCAT CASE

Further to my 2002 evaluation based on the treatment by G. David Thayer in the Condon Report, a study of the original BB case file allows a couple more comments:

First, Thayer's brief account (CR p.145) is proved fairly accurate except that he misconstrues answers 2.e and 2.f as implying that the object "went into a fast steep climb, disappearing in about 5-8 minutes" and argues that a climb visible for 5-8 mins cannot have been very "fast", favouring a balloon. In fact these questions are entirely separate.

Reconstructing the answers into the AFR200-2 questionnaire format they look like this:

**2.e) [Manner of disappearance of object(s)] IN A FAST STEEP CLIMB**

**2.f) [Length of time in sight] FIVE TO EIGHT MINS**

Thus 5-8 mins is the total sighting time including the initial phase where the object "moved slowly at constant altitude" *before* it disappeared in a "fast steep climb", *not* the duration of the climb, which is nowhere stated.

Thayer also omitted to mention what the file card characterises as "manouvering radically". The original report states:

**2.d) [Description of flight path and maneuvers of object(s)] OBJECT APPEARED TO MOVE SLOWLY AT CONSTANT ALT THEN MADE FAST PIVOTING TURNS**

Note: This description is referenced in a handwritten comment on the telex that states: "Characteristics those of a balloon in fast climb - observed 5-8 minutes. Similar to way balloon behaved when observed by Drs Miley, Robinson, Opp., Dr Hynek and Capt Gregory at [illegible] last October."

The only quantitative information about the climb comes from the estimated initial and terminal elevations of the object, 45° and 65°. A trajectory with an overall horizontal angular distance of 65° terminating in a climb that makes a "steep" angle with the horizontal over a comparatively small elevation difference of 20° tends to imply a "hockey stick" profile, i.e., the climb does not occupy a large proportion of the total horizontal distance, and therefore does not occupy a large proportion of the total time either, consistent with the *prima facie* intent of the witness description, which is rather difficult to interpret as a balloon.

Thayer reports that the object was "moving from SW to NE in agreement with prevailing winds in the area." There are two problems with this:

- 1) The "SW - NE" course is quoted correctly from the file card summary, but this is a Blue Book error. The report itself gives initial and final azimuths of 150° and 75°, or SE to NE.
- 2) Thayer gives no source for his comment about "prevailing winds", but the report itself states:

**7.b) [Report from nearest AWS or U.S. Weather Bureau Office of wind direction and velocity in degrees and knots at surface, 6,000', 10,000', 16,000', 20,000', 30,000', 50,000', and 80,000', if available] NNW 3 KNTS**

Therefore the observed motion generally from S to N was in fact *against* the wind direction

recorded (presumably surface wind; no balloon ascent levels are given), which was from the North Northwest.

The total horizontal angular distance covered is estimated at  $65^\circ$ , therefore the bracketed *average* angular rate is  $0.13^\circ - 0.2^\circ/\text{sec}$ , which is not rapid, although the terminal climb will have been significantly faster. But assuming the object to have been a weather balloon, its distance from the observer was certainly small given the well-resolved detail. For example, a 4ft balloon at 500ft would have the angular diameter of the full moon, about  $0.50^\circ$ , and in terms of this example an angular rate of  $13^\circ/\text{sec}$  translates to a transverse wind speed of only about 1ft/sec ( $\sim 1\text{km/hr}$ ). We know that this must be a minimum, but we could multiply by an arbitrary factor 10 to get the maximum rate during climb and still only get 10km/hr or about 6 knots. It could easily be argued that a NNW surface wind of 3 knots rotated to a general S wind of 6 knots a few hundred feet above the ground.

Nevertheless, given the general appearance, the green lights, the rapid erratic apparent motion perceived by a presumably near-stationary ground observer (i.e., not a pilot buzzing a balloon and misinterpreting sudden relative motion, *a la* Gorman, Fargo 1948), the presumable familiarity of the observer with local balloon releases, the motion against recorded local winds, and other arguments, one has to conclude that the balloon explanation is very weak. Indeed, the Project 10073 Record Card indicates that Blue Book initially thought so too, and apparently carried the case as "unidentified", this evaluation being later scratched out and replaced with "probable weather balloon". This is pure speculation, unsupported by any kind of sensible evidence. The correct evaluation should have been "insufficient information" pending collection of actual balloon ascent records and detailed narratives from the observers, including the radar operator.

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