Synopsis of Unconventional Flying Objects: JSE Review

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SUBJECT: Synopsis of Unconventional Flying Objects, by Paul Hill, Hampton Roads Publ. Co., Charlottesville, VA, 1995 (ISBN 1-57174-027-9)

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To the degree that the engineering characteristics of UFOs can be estimated by empirical observation, in my opinion the above-referenced, recently-published book by Paul Hill provides the most reliable, concise summary of engineering-type data available. [1] The data were compiled over decades of research by a Chief Scientist-Manager at NASA's Langley Research Center [2] who acted as an informal clearinghouse for UFO-related data. The strength of the compilation lies in its thoughtful separation of wheat from chaff, and the analysis of the former into coherent patterns, including detailed calculations. Perhaps surprising to the casually interested, under careful examination the observations, rather than defying the laws of physics as naive interpretation might suggest, instead appear to be solidly commensurate with them, as the following discussion shows.

One of the most consistently-observed characteristics of UFO flight is a ubiquitous pattern in which they tilt to perform all maneuvers. Specifically, they sit level to hover, tilt forward to move forward, tilt backward to stop, bank to turn, and descend by "falling-leaf" or "silver- dollar-wobble" motions. Detailed analysis by Hill shows that such motion is inconsistent with aerodynamic requirements, but totally consistent with some form of repulsive force-field propulsion. Not satisfied with paper analyses alone, Hill arranged to have various forms of jet-supported and rotor-supported circular flying platforms built and tested. Hill himself acted as test pilot in early, originally-classified, versions, and found the above motions the most economical for control purposes. Pictures of these platforms are included in the text.

In an effort to examine the force-field propulsion hypothesis yet further, Hill analyzed a number of cases involving near-field interactions with an apparent craft in which some form of force was in evidence. These include examples in which a person or vehicle was affected, tree branches were parted or broken, roof tiles were dislodged, objects were deflected, and ground or water were disturbed. Under close analysis the subtleties of these interactions combine to point unequivocally to a repulsive force field surrounding the craft, while discriminating against propulsion mechanisms involving jet action, pure electric or magnetic effects, or the emission of

energetic particles or radiation (although the latter may accompany the propulsive mechanism as a secondary effect). Further detailed investigation indicates that the particular form of force field propulsion that satisfies observational constraints is what Hill labels a directed acceleration field; that is, a field that is, in general, gravitational-like in nature, and, in particular, gravity-canceling. [3] Such a field acts on all masses in its sphere of influence as does a gravitational field. Corollary to this conclusion is that observed accelerations ~100 g's relative to the environment could be sustained without on-board high-g forces.

One of the consequences of the above identification of field propulsion type by Hill is his conclusion, supported by detailed calculation, computer simulation and wind-tunnel studies, that supersonic flight through the atmosphere without sonic booms is easily engineered. Manipulation of the acceleration-type force field would, even at supersonic speeds, result in a constant-pressure, compression-free zone without shockwave in which the vehicle is surrounded by a subsonic flow-pattern of streamlines, and subsonic velocity ratios. An additional benefit of such field control is that drops of moisture, rain, dust, insects, or other low-velocity objects would follow streamline paths around the craft rather than impact it.

Another puzzle resolved by Hill's analysis is that craft observed to travel continuously at Mach 4 or 5 do not appear to generate temperatures sufficiently high to be destructive to known materials. In other words, UFOs appear to prevent high aerodynamic heating rates, rather than permitting a heating problem, then surviving it with heat- resistant materials as is the case of the Shuttle whose surface temperatures can reach 1300 degrees C. The resolution of this potential problem is shown by Hill to derive from the fact that the force-field control that results in the prevention of shockwave drag as discussed above is also effective in preventing aerodynamic heating. In effect the airflow approaches, then springs away from the craft, depositing no energy in the process.

A further example of the type of correlation that emerges from Hill's analytical approach is provided by an analysis of the economy of various flight-path profiles. It is shown that high-angle, high- acceleration departures on ballistic-arc trajectories with high-speed coast segments are more efficient than, for example, intermediate-level, horizontal-path trips, both in terms of required impulse-per-unit-mass and time-of-flight parameters. This he correlates with the observation that UFO departures are of the dramatically high-angle, high-acceleration type.

Also of interest is Hill's analysis of the spectra and intensity of an apparent plasma sheath surrounding such craft, the details of which correlate with what one would expect in terms of it being a secondary effect associated with the propulsion system, for example, a blue shift and

intensity increase during a "power-up" phase, and the opposite during hover or landing maneuvers. An additional fine point that emerges from this analysis is resolution of the paradox that observation on a direct line-of-sight to a near part of the craft can reveal a metallic-like structure while the attempt to observe the outline of the craft, necessarily by an oblique line-of-sight, results in an indistinct blur. Analysis shows this to be a reasonable outcome of an expected re- absorption of reflected light by the surrounding plasma in the longer- length path associated with the more oblique view.

Another typical nugget of information is found in Hill's discussion of the results of the analysis of a possible UFO artifact, the famous Ubatuba magnesium fragments claimed to have originated from an exploded unidentified craft near Ubatuba, Brazil. Laboratory analysis of the samples found the magnesium to be not only of exceptional purity, and anomalous in its trace composition of other elements, but 6.7% denser than ordinary pure magnesium, a figure well beyond the experimental error of the measurement. Hill's calculation shows that this observation can be accounted for by assuming that the sample contained only the pure isotope Mg26, rather than the naturally-occurring distribution among isotopes Mg24, Mg25 and Mg26. Since the only isotope separation on a significant scale in terrestrial manufacture is that of uranium, such a result must be considered at least anomalous, and possibly as evidence for extraterrestrial manufacture.

Additional calculations concerning the parameters of interstellar travel (including relativistic effects), and the energetics of such travel, have been performed and are included in tabular and graphical form. The wealth of material in these sections, along with discussion of the broad implications of this material, reveal the dedication and thoroughness of Hill's approach to his self-assigned task.

In the final analysis, one must conclude that Hill has assembled as good a case as can be made on the basis of presently available data that the observation of some "unconventional flying objects" is compatible with the presence of engineered platforms weighing in at something around 30 tons, which are capable of 100-g accelerations and 9000-mph speeds in the atmosphere. Perhaps more important for the technical reader, however, is Hill's supporting argumentation, based on solid analysis, that these platforms, although exhibiting the application of physics and engineering principles clearly beyond our present-day capabilities, do not appear to defy these principles in any fundamental way.

1. The book also comes highly recommended in a Frontispiece by Apollo 14 astronaut Edgar Mitchell, and in a Foreword by retired McDonnell Douglas R&D manager Robert M. Wood. [Back]

2. Ass't Chief, Pilotless Aircraft Research Div.; Assoc. Chief, Applied Materials and Physics Div. Retired from NASA in 1970. [Back]

3.Recent examples of the discussion of the technical aspects of candidate field propulsion mechanisms of this type are given in M. Alcubierre, "The warp drive: hyper-fast travel within general relativity," Class. and Quantum Grav., vol. 11, p. L73 (1994), and in H. Puthoff, "SETI, the velocity-of-light limitation, and the Alcubierre warp drive: An integrating overview," Phys. Essays vol. 9, No. 1, p. 156 (March 1996). [Back]