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FORM 305
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DATE: 27 June 1968
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TO: R. M. Wood, A-830

FROM: J. M. Brown, A-833

SUBJECT: PROPOSED VEHICLE R&D PROGRAM (Project BITBR)

COPIES TO: D. B. Harmon, Jr., W. P. Wilson, Jr., A-830; File

REFERENCE:

Attached is a description of the Vehicle R&D Program which highlights the technical aspects of the background and outlines the immediate future efforts. The efforts outlined in this memorandum are intended to reflect the feedback from the Management Briefing, "Advanced Vehicle Concept Research" which started on 2 May 1968. Note particularly that for each different principal area of the effort there are definitely identifiable initial goals whose achievement or non-achievement can be assessed. Subsequent goals are identified but become more nebulous. Finally, note that the section on the lumped-parameter analysis of the electron should provide a determination of all the background field parameters. In turn, this will provide the capability to compute the amount of fringe shift for the experiment currently being performed to measure the effect on the velocity of light produced by a magnetic field.

This memorandum should serve as the core for a comprehevsive description of the project which is independent of the project personnel.

J. M. Brown

J. M. Brown, A-833

JMB:msb
Attachment - Noted

DOUGLAS PRIVATE

PROPOSED VEHICLE
RESEARCH AND DEVELOPMENT
PROGRAM

25 JUNE 1968

INTRODUCTION

The purpose of this memorandum is to outline a tangible step-by-step research and development program which will provide firm answers regarding a number of building blocks which are identified as possible elements of advanced propulsion systems. Two principal approaches and a secondary approach are outlined. The principal approaches consist of evolving the systems from basic physics and evolving directly from an analysis of UFO (Unidentified Flying Object) observations. Of course, any information generated from one approach will be fed into the other approaches.

The basic physics approach to a great extent is based on a new theory of physics - the kinetic particle theory. The program outlined here will rigorously examine the validity of the kinetic particle theory using a sure, but laborious, lumped-parameter analysis. It is also proposed to supplement the lumped-parameter analysis with an elegant, but not necessarily sure, parallel approach. Laboratory experiments are described which test the kinetic particle theory and, at the same time, are very close to vehicle propulsion configurations.

An ancillary approach to vehicle design is based on the assumption that UFO's are extraterrestrial vehicles and that design clues may be obtained by studying data from these vehicles. These data may be obtained from the literature, individual observers, or from communication schemes utilized by the vehicles. The data obtained may be usable to directly configure vehicle type experiments or to give technical insight into the vehicle design.

In order to cover all bets a number of miscellaneous avenues have been, and will continue to be, pursued with low priority. A discussion of these efforts is included in this memorandum. This discussion completes a comprehensive coverage of the Advanced Concepts efforts.

The final section of this memorandum summarizes the immediate tasks which it is anticipated will be pursued.

VEHICLE OBSERVATION BACKGROUND

There are many UFO (Unidentified Flying Objects) observations which are readily explainable by the extraterrestrial vehicle hypothesis and which are difficult to explain with any other hypothesis. The bulk of these "extra-terrestrial vehicles" have characteristics which are consistent with out current understanding of scientific limitations, even though their capabilities exceed our current technology. Exceeding our current technology, of course, is quite consistent with the extraterrestrial vehicle hypothesis. Some of the "vehicle" observations, however, indicate capabilities which exceed our scientific limitations. The principal capability of this type is that indicated by extremely high acceleration rates and other gravitational control (anecdotal) data. The vast majority of the "vehicle" sightings indicate that strong magnetic fields are generated by the vehicles. These fields are presumed to be connected with the propulsion system.

This background indicates that some UFO's may be extraterrestrial vehicles; they certainly have not been proven otherwise. The existence of extra-terrestrial vehicles indicates that vehicles can be built which would have capabilities quite useful to McDonnell Douglas Corporation. In addition, if the UFO's are vehicles then the UFO observations give clues for guiding a research and development program for evolving the vehicles. In summary, the results of an analysis of the UFO observations provide the basis for MDC management to allocate a small expenditure for high risk-high payoff vehicle R&D. At the same time, the observations provide guidelines for conducting the vehicle R&D.

KINETIC PARTICLE THEORY BACKGROUND

The postulates of a comprehensive kinetic particle theory of physics were formulated and published in 1965, see Reference 1. The consequences of these postulates were examined somewhat in Reference 1 but in greater depth in Reference 2, still greater depth in Reference 3, and further during the past year by the Advanced Concepts personnel in the Research and Development Organization of the McDonnell Douglas Astronautics Company.

The postulates of the theory are that space and time are separate and absolute (Galilean) and that all matter, radiation, and a background ether consists of one type particle which obeys the law of inertia, is smooth, elastic, and spherical. Otherwise, the particles are completely inert and all forces, e.g., nuclear, electromagnetic, decay, and gravitation, are produced by particle collisions.

Classical mechanics results rigorously from the postulates. The theory would be accepted by the physics community as a unifying theory if the following three goals were achieved:

1. The elementary particles were derived from the postulates.
2. Special theory of relativity observations were derived from the postulates.
3. The mechanism of gravitation were derived from the postulates.

The approach currently being taken to achieve the above, as well as other results, is to derive the characteristics including relativistic effects and the fields, of all fundamental particles. Current understanding of the various areas is outlined in the following paragraphs.

The elementary particles are believed to be stable[1] concentrations of the basic background particles. The configuration of an electron is defined in the most detail of all the elementary particles. The electron is believed to be a two-component vortex in which the axial flow corresponds to the magnetic moment while the tangential flow corresponds to the angular momentum. The two flows together make the electrostatic field when the electron is at rest. When moving, the two flows make the electrostatic and the magnetic field. The quantitization of the electron mass, and of the angular momentum for all particles is believed to result from a self-induced pinch, or mutual shielding, phenomena. All elementary particles are either translatory waves (photons, neutrinos, gravitons) or standing waves (electrons, muons, pions, kaons, neucleons, and other bayron's) in the ether.

[1] In terms of elementary particles, life times significantly longer than 10^{-23} sec are "stable". Particles with lifetimes up to only a few orders of magnitude greater than 10^{-23} sec are termed "resonances".

Special theory of relativity observations are believed to result since all observed phenomena in the universe are waves (translatory or standing) of classical (Newtonian) particles and thus are governed by the classical wave equation, $\nabla^2\varphi = -(1/c^2)\partial^2\varphi/\partial t^2$ (c = speed of light). In this equation the square of each space coordinates has exactly the same role as $-c^2t^2$. Thus, considering a space-time continuum with x, y, and z on the same basis as i c t ($i = \sqrt{-1}$) is quite similar to considering a classical wave existing in an absolute space-absolute time.

Gravitation is believed to be due to the gradual collection of basic particles from the background by all matter and then a pulse emission of a group of the basic particles in the form of a non-interacting particle (graviton or neutrino).

A general equation has been derived during the past year, see Appendix A, which represents the characteristics of large numbers of the basic particles. This equation, in principle, provides the capability for comprehensively investigating all ramifications of the theory. However, the equation is complex and closed form solutions may be difficult to obtain.

This kinetic particle theory predicts that photon velocity will be reduced if light goes along a magnetic field against the field lines and increased when with the field lines. Current theory predicts no change. A laboratory experiment currently is in process to examine this effect.

In summary, the kinetic particle theory is a precisely formulated theory which is capable of being rigorously tested. The first analysis block, the derivation of classical mechanics, has been completed. The first major step of subsequent blocks, the continuum equation, has been derived. Qualitative descriptions of the expected solutions of the continuum equation are available and should be quite useful in seeking solutions. These qualitative descriptions provide the basis for all areas of physical science and are sufficiently detailed that they provide a feeling that the theory should be successful.

VEHICLE PROPULSION BACKGROUND

The types of propulsion which are of primary interest are gravitational control and amplification and matter annihilation, see Appendices B and C. Gravitational control and amplification research currently is along the line of verifying the previously defined gravitational mechanism, see Page 6, determining how to increase the graviton (or neutrino) production rate by many orders of magnitude (possibly with high magnetic fields), and simultaneously directing the gravitons opposite the vehicle desired thrust[1]. Matter annihilation consists of changing matter into photons or the basic particles which would be directionally emitted. Again, the primary approach to annihilation is by the use of high magnetic fields. In fact in all these propulsion schemes it appears that a quickly changing magnetic field (which, of course, is equivalent to a changing electrostatic field) or fields is the only approach so far identified to initiate the propulsion mechanism. Note again that the high magnetic fields in the UFO reports and the high acceleration rates may be consistent with the kinetic particle theory.

The kinetic particle theory of matter provides the capability for examining gravity control and amplification, matter annihilation to basic particles, and matter annihilation to photons. Current physical theory only provides the capability of examining the last named propulsion concept. The next section outlines the step-by-step analytical and experimental approaches to examine these propulsion concepts.

A a final note on propulsion concepts it seems that any one of three different arguments justify the experiment to produce in the laboratory as high a magnetic field as possible. These separate arguments are:

1. UFO data indicate the use of high magnetic fields.
2. The propulsion concepts derived from the kinetic particle theory indicate that high magnetic fields would be used.
3. From current physics it seems to be a safe bet that new, unidentified propulsion concepts would utilize high magnetic fields.

[1] Such a scheme may permit a human to withstand acceleration rates of hundreds, or thousands, of g's.

For all of these reasons, high magnetic field generation schemes will be studied analytically and experimentally.

CONTINUUM EQUATION ANALYSIS

The first step in the evaluation of the consequences of the postulates of the kinetic particle theory of physics consisted of deriving all of classical mechanics. This step has been accomplished, see Reference 3. This first step was accomplished by considering the basic particles individually, or two at a time. The next step requires a quantitative description of ensembles of large numbers of the basic particles, since it is presumed that large numbers of basic particles are required to make an individual photon, neutrino, or electron, for example. These particles are the "objects" which are observed in nature while the laws of classical mechanics are generalized laws which "govern" the action of the particles of nature. The continuum equation is a general integro-differential equation which describes the action of large enough numbers of the basic particles so that the particles produce the action of a continuum.

Appendix A consists of the derivation of the continuum equation. The equation consists of a number of operations upon the particle density function in phase space. The density function is represented by φ and depends upon three spatial coordinates (x, y, z), three velocity coordinates (Ω, s), and upon time. The function is defined such that at a given time the expected number of particles in an increment of phase space (a position space increment $\Delta x\Delta y\Delta z$ times a velocity space increment $\Delta\Omega\Delta s$) is given by $\varphi\Delta x\Delta y\Delta z\Delta\Omega\Delta s$. The equation relates the net density of particles at a particular (position) phase space point convected out less the density of particles scattered in plus the density of particles scattered out to the time rate of increase in the particle density function.

While this equation is believed to be quite general in that a complete human, for example, is presumed to be one solution, or eigenstate, of the equation, it is not anticipated that the equation would ever be used to derive complex assemblages. Instead, the equation should be useful for deriving

assemblages up to and possibly through the quantum levels and thus forming a new basis, possibly with slightly modified consequences, for quantum theory. In particular, it is anticipated that photons, neutrinos, gravitons, electrons, and all the other nuclear particles (all of which in current physics are postulated) should result as eigenstates of the equation.

In working on this equation there are a number of distinct avenues which can be pursued. The first item should be to obtain an independent check of the derivation. The area which is most likely to have an error is the analysis of the probability of scattering into a given increment of velocity space. Even if the in-scattering analysis is correct as presented in Appendix A, it is quite possible that a more useful form of the result could be derived by

applied electromagnetic fields on the shedding rate. The application of steady state and varying magnetic fields, electrostatic fields, and photon fluxes should be examined. If the shedding rate can be increased several tens of orders of magnitude and can be directionally released, then the gravity amplification propulsion concept will exist.

This research on the continuum equation is recognized as being of a high order of difficulty, but the payoff is high. It should be noted, however, that each step is quite definitive in that not only the goal but the approach to each step should be quite clear to an expert on partial differential equations.

Extensions and modifications of this approach which would examine all fundamental particles as well as the matter annihilation propulsion scheme seem to be clear and not worthy of dwelling upon at the present time.

LUMPED PARAMETER ANALYSIS

Lumped parameter techniques applied to the analysis of the conjectured elementary particle configurations have the advantage of providing, within net fineness constraints, straight-forward sure methods of proving, or disproving, the stability of the configurations. Thus, for a given configuration selection, a routine, sure, but laborious analysis technique exists. It is felt that the conjectured electron configuration has a high likelihood of being sufficiently accurate so that, coupled with its extreme stability (lifetime $>10^{21}$ years), a relatively coarse lumped parameter analysis would prove stability.

EXPERIMENTS TO SIMULATE ELEMENTARY PARTICLES

Once an analysis (closed form or lumped-parameter) of an electron is completed which provides a steady-state description, then a simulation of the electron in the atmosphere using air molecules can be constructed. Such a simulation may be useful to check on a lumped-parameter steady-state solution. However, the principal utility of the simulation is expected to indicate standing wave patterns, if they exist, and the free-field collection - neutrino/

graviton ejection cycle, which is believed to exist. This type simulation could be extremely useful and possibly could be extended to all of the fundamental matter particles including their interactions as well as photon emission.

ANALYSIS OF UFO OBSERVATIONS

Three avenues appear worthwhile for obtaining useful data from the UFO's:

1. Compilation of data in the literature.
2. Interviews with "contactees".
3. ESP.

There are many books (100's), magazine articles, and other sources of UFO reports. If the data in these reports were carefully organized and scientifically studied, which to our knowledge has never been done, it is possible that useful clues to the construction of a vehicle would emerge. In view of this, a concerted effort is now in process to extract all useful data from the tens of UFO books and the many magazines which currently are at hand. In extracting the data the only criterion will be whether or not the item extracted is descriptive of the UFO or its occupants or of the local environment. A form has been evolved for recording the extracted data, see Appendix D. It is anticipated that most events would be reported on the one page. However, extensive reports such as D. W. Fry's would start with this form but would extend many pages. Eventually this portion of the program should result in an extensive report which provides broad coverage of the literature.

For the purposes here a "contactee" is defined as a person who may have vehicle data (principally propulsion data) which would be useful design clues. Appendix E is a start of making a list of potential contactees. Once the list is completed a cost/payoff ordering will be made and the interview plan will be firmed up.

Throughout much of the UFO literature there are indications that the observers have been communicated information by non-conventional means, presumably by extra sensory preception (ESP). Comments such as "I heard it in

my head" are common. A low priority effort will be made to study the literature, to measure the signal carrier (most likely electromagnetic fields), and to determine how to communicate in this manner. If it can be established that the communication scheme is real, then the last goal certainly should be achievable. If the communication scheme can be established, this in itself would be a significant achievement. However, the utility to us would be to obtain vehicle clues by "eavesdropping" or possibly by a direct back and forth communication link. The first step in this program beyond the low level literature survey will be to measure the magnetic fields (and possibly other phenomena) around someones head when he is supposedly receiving ESP communication.

MISCELLANEY

The approach so far utilized in the development of the kinetic particle theory of physics has been to continually broaden the scope of qualitative application of the theory as a result of reading a large number of books in diverse scientific areas while at the same time generally tightening the analysis everywhere throughout the structure and particularly making the analysis perfectly rigorous where possible. It is believed that this approach is being successful and should be continued.

There are a large number of phenomena, particularly so called psychic phenomena, which appear to be beyond current science. These phenomena may not be physical, but they may be. In case of the latter, then clues to the structuring of a new theory may result from a study of these phenomena. In order to maximize success potential a small literature survey and limited investigation effort on all strange phenomena appears to be well worthwhile. Along this line there exists the phenomenon of "water dousing" which undoubtedly works but is not understood. This phenomenon is definitely worth examining and it is planned to investigate it in the forthcoming months.

Finally, experiments which the kinetic particle theory predicts outcomes which differ from current theory will be considered for performing. A particular experiment along this line is the "magnetic field effect on light

velocity" experiment currently being performed. The weakness of this experiment is that the effect has not been quantitatively determined. This will be remedied as a result of the analysis outlined above in the Continuum Equation Analysis or Lumped-Parameter Analysis.

IMMEDIATE PRIORITIES

Item	Personnel
Continuum Equation Analysis	Pipes/Brown
Check Equation	
Examine Existence of Solutions	
Derive Maxwell-Boltzmann Distribution	
Derive Electron Steady State	
Lumped-Parameter Analysis	Brown
Examine Electron Steady State	
Generation of High Magnetic Field	Bjornlie
Generate Higher Field Than Previously Generated	
Search for Interactions (Grav./EM) Not Previously Sought	
Analysis of UFO Observations	Wilson
Compile and Organize Literature	
Plan Interviews of Contactees	
Miscellaney	
Complete Magnetic/Light Speed Experiment	Bjornlie

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