Listed below are records found in the NASA Aeronautics and Space Database for a search on UFOs, 1960-present. No records were found mentioning artificial objects on the moon that were not of human origin. Materials that are marked "Available From: CASI" can be purchased from:

NASA Center for AeroSpace Information
7121 Standard Drive
Hanover, MD 21076-1320
PH: 301-621-0390
FX: 301-621-0134
help@sti.nasa.gov
http://www.sti.nasa.gov/

Most of the remaining materials can be purchased from:

AIAA Dispatch
5109 Cherry Street
Kansas City, MO 64110-2498
PH: 800-662-1545
FX: 816-926-8794
dispatch@lindahall.org
http://www.lindahall.org/pubserv/aiaa/dispatch.htm

Records marked in bold are restricted.

Result Set Record: 1
Title Information: Computer simulations of pure and mixed systems of disklike particles interacting with the S-function Corner potential
Author and Affiliation: Cinacchi, Giorgio; Dipartimento di Chimica, Universita' di Pisa; Via Risorgimento 35, 56126 Pisa Italy
Tani, Alessandro; Dipartimento di Chimica, Universita' di Pisa; Via Risorgimento 35, 56126 Pisa Italy
Abstract: The S-function potential for single-site particles has been recently introduced as an extension of the Gay-Berne potential. With the S-function potential, we can model particles of other and, possibly, more realistic shapes than Gaussian overlap ellipsoids and we can simulate mixtures in a systematic manner. As an example of both applications, we have studied via Monte Carlo computer simulation assemblies of cylindrically symmetric disklike particles of two different types. They can be considered complementary perturbations of a disk, with, respectively, a depression (red-cell, R particles) and a protuberance (ufo, U particles) at the center. The former is meant to mimic the average effect of side chains of real diskotics, while the latter is a simple representation of diskotic metallomesogens. Four systems of these kind of particles have been studied as a function of temperature: two pure cases and two 1:2 binary mixtures, so that the combined effects of shape and concentration can be observed. We have found the

Authorized Users: U.S. Government agencies and U.S. Government agency contractors only
Security Classif.: Unclassified
Restriction on Access: Limited Distribution
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jul 12, 2003
Description: 384p
Document Language: English
Document Type: Book/Monograph
Financial Spons. Info.: NASA; United States
Format and Price Code: Hardcopy - Price Code: A17
Imprint and Other Notes: Transl. into ENGLISH of the book ""Problema Poiska Vnezemnykh Tsivilizatsiy" Moscow, USSR, Izdatelstvo Nauka, 1981 p 1-263
Miscellaneous Notes: Transl. by Scientific Translation Service, Inc., Santa Barbara, Calif.
NASA Major Term: EXOBIOLOGY; EXTRATERRESTRIAL INTELLIGENCE; GALAXIES; INTERSTELLAR MATTER; SIGNAL DETECTION; SOLAR SYSTEM
NASA Minor Term: COMMUNICATING; EXTRASOLAR PLANETS; INTERSTELLAR TRAVEL; ORGANIC COMPOUNDS; RADIO PROBING; SPACE COLONIES; UNIDENTIFIED FLYING OBJECTS
Org. Source Info.: NASA; Washington, DC, United States
Publisher Info.: United States
Subj. Category Text: SPACE SCIENCES (GENERAL)

Result Set Record: 50
Title Information: Flying saucers over Taiga
Author and Affiliation: Lagovskiy, V. N.
Accession Number: 86X70617
Document ID (CASI): 19860069157
Report Number: AD-B094474L; FTD-ID(RS)T-1324-84
Publication Date: Jul 30, 1985
Authorized Users: U.S. Government agencies only
Security Classif.: Unclassified
Restriction on Access: Limited Distribution
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jul 12, 2003
Description: 7p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Department of Energy; United States
Format and Price Code: Hardcopy - Price Code: A02
Imprint and Other Notes: Transl. into ENGLISH from Sotsialisticheskaya Industriya (USSR), no. 165(4556), cols 1-5 20 Jul. 1984 p 4

NASA Major Term: AIRSHIPS; DISKS (SHAPES); INFLATABLE STRUCTURES; TUNDRA; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: EXHAUST GASES; GAS TURBINES; TRANSPORT AIRCRAFT
Org. Source Info.: Air Force Systems Command; Foreign Technology Div.; Wright-Patterson AFB, OH, United States
Publisher Info.: United States
Subj. Category Text: AERODYNAMICS

Result Set Record: 51
Title Information: Is mankind unique in the Galaxy?
Author and Affiliation: Martin, A. R.
Bond, A.; Atomic Energy Research Establishment, Culham Laboratory, Abingdon; Oxon, United Kingdom
Abstract: There is a relation between questions regarding the uniqueness of mankind in the Galaxy and the 'Fermi Paradox'. It has appeared to Fermi that the eventual controlled command of astronomical quantities of energy, and the ability for mankind to head out into the universe was only a matter of time. On the other hand, he reasoned that a large number of sites for intelligence should have developed in the Galaxy a long time ago. He expected that such civilizations in colonizing the Galaxy would come in contact with the earth, and yet, there is no evidence regarding such contacts. Many aspects of the Fermi Paradox have been debated. The present investigation represents an attempt to further contribute to that debate by exploring some of the arguments prompted by the Paradox. It is concluded that all of the arguments have only one self-consistent resolution. According to this resolution, mankind is unique in the Galaxy.
Accession Number: 85A13153
Document ID (CASI): 19850031002
Report Number: IAF PAPER 84-239
Publication Date: Oct 1, 1984
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 12p
Document Language: English
Document Type: Preprint
Imprint and Other Notes: International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 12 p.
NASA Major Term: EXTRATERRESTRIAL INTELLIGENCE; MILKY WAY GALAXY
NASA Minor Term: INTERSTELLAR COMMUNICATION; INTERSTELLAR TRAVEL; PARADOXES; PROBABILITY THEORY; UNIDENTIFIED FLYING OBJECTS
Publisher Info.: International Organization

Title Information: The search for extraterrestrial intelligence: Listening for life in the cosmos
Author and Affiliation: Mcdonough, Thomas R.; California Institute of Technology; Pasadena, United States
Abstract: The reasons for and the activities of SETI (Search for Extraterrestrial Intelligence) are discussed. The history of the notion of intelligent life existing on other worlds is reviewed, and ideas of aliens in modern popular culture are examined. Arguments for and against the existence of intelligent life elsewhere are considered. Reports of extraterrestrial intelligence that turned out to be false are described, as are the messages sent out from earth to any aliens that may find them. The fight to maintain SETI funding and the related efforts in other countries are discussed. The arguments about UFOs are reviewed.
Accession Number: 87A33257
Document ID (CASI): 19870045983
Publication Date: JAN 1, 1987
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 253p
Document Language: English
Document Type: Book/Monograph
Imprint and Other Notes: New York, John Wiley and Sons, Inc., 1987, 253 p.
NASA Major Term: EXTRATERRESTRIAL INTELLIGENCE; EXTRATERRESTRIAL LIFE; PROJECT SETI
NASA Minor Term: BIOASTRONAUTICS; BIOLOGICAL EVOLUTION; CHEMICAL EVOLUTION; EXTRATERRESTRIAL COMMUNICATION; GRAVITATIONAL LENSES; HISTORIES; INTERSTELLAR TRAVEL; PLANETOLOGY; PLANETS; PULSARS; SOLAR SYSTEM; SPACE EXPLORATION; UNIDENTIFIED FLYING OBJECTS

Publisher Info.: United States
Subj. Category Text: SPACE SCIENCES (GENERAL)

Result Set Record: 48
Title Information: Promoting science through science fiction and pseudoscience
Author and Affiliation: Roslund, Curt; Chalmers Univ. of Technology; Goeteborg, Sweden
Abstract: Science fiction novels rich in scientific detail and with interesting applications of physics; books explaining the physics of science fiction; and books debunking pseudo-scientific theories about alien space ships are discussed.
Accession Number: 87N25049
Document ID (CASI): 19870015616

Publication Date: Nov 1, 1986
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Availability Notes: US Distribution and Sales Only
Available From: CASI
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 4p
Document Language: English
Document Type: Conference Paper
Financial Spons. Info.: International Organization
Format and Price Code: Hardcopy - Price Code: A01
Imprint and Other Notes: In ESA Proceedings of the GIREP Conference 1986. Cosmos: An Educational Challenge p 141-144 (SEE N87-25026 18-89)
NASA Major Term: ASTRONOMY; EDUCATION; LITERATURE; TEXTBOOKS
NASA Minor Term: EXTRATERRESTRIAL INTELLIGENCE; UNIDENTIFIED FLYING OBJECTS
Org. Source Info.: Chalmers Univ. of Technology; Section of Astronomy.; Goeteborg, Sweden
Publisher Info.: International Organization
Source Publication: ESA Proceedings of the GIREP Conference 1986. Cosmos: An Educational Challenge/ p 141-144/ (SEE N87-25026 18-89)
Subj. Category Text: SOCIAL SCIENCES (GENERAL)

Result Set Record: 49
Title Information: The problem of the search for extraterrestrial civilizations
Author and Affiliation: Troitskii, V. S. (editor)
Kardashev, N. S. (editor)
Abstract: The current status of the various problems associated with the search for and communication with extraterrestrial civilizations is reviewed. Laws governing the development of extraterrestrial civilizations are discussed, along with astroengineering activity and the possibility of detecting it, the problem of extraterrestrial interstellar probes in the solar system, and radio search strategies for communicative extraterrestrial civilizations. Consideration is also given to methods for evaluating the number of civilizations in the Galaxy, problems in the understanding of the origin of life, and the detection of interstellar biological molecules. Aspects of the problem of contact with extraterrestrial civilizations are examined, and the dependence of language on the structures making use of it are considered. An extensive bibliography of literature on the CETI problem published from 1974 to 1978 is also presented.
Accession Number: 86X10027
Document ID (CASI): 19860068087
Report Number: NASA-TM-77668; NAS 1.15:77668
Contract Number: NASW-4004
Publication Date: Nov 1, 1985

Subj. Category Text: SPACE SCIENCES (GENERAL)

Result Set Record: 52
Title Information: First UFO incident for our country
Author and Affiliation: Long, R.; Air Force Systems Command; Wright-Patterson AFB, OH, United States
Abstract: The possibility the flying object observed by 10,000,000 people in the Sichuan and Yunnan provinces of China during a 6 to 7-minute period was a spy plane is advanced.
Accession Number: 84N16058
Document ID (CASI): 19840007990
Report Number: AD-A133326; FTD-ID(RS)T-1019-83
Publication Date: Sep 9, 1983
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 6p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Department of Energy; United States
Imprint and Other Notes: Transl. into ENGLISH from Hangtian (China), no. 4, 1982 p 12-13
NASA Major Term: CHINA; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: THEORIES
Org. Source Info.: Air Force Systems Command; Foreign Technology Div.; Wright-Patterson AFB, OH, United States
Publisher Info.: United States
Subj. Category Text: SOCIAL SCIENCES (GENERAL)

Result Set Record: 53
Title Information: UFO identification
Author and Affiliation: Lynev, R.
Accession Number: 83X75767
Document ID (CASI): 19830084008
Report Number: AD-B073127L; FTD-ID(RS)T-1694-82
Publication Date: Mar 4, 1983
Authorized Users: U.S. Government agencies only
Security Classif.: Unclassified
Restriction on Access: Limited Distribution
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jul 11, 2003

Description: 6p
Document Language: English
Document Type: Other
Financial Spons. Info.: Department of Energy; United States
Format and Price Code: Hardcopy - Price Code: A02
Imprint and Other Notes: Transl. into ENGLISH from Sotsialisticheskaya Ind. (USSR), no. 206(3997), 5 Sep. 1982 p 4 cols 1-6
NASA Major Term: DATA MANAGEMENT; PERCEPTION; PSYCHOLOGY; REPORTS; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: COGNITION; INFORMATION THEORY; METEOROLOGICAL PARAMETERS; OPTICS; VISUAL PERCEPTION
Org. Source Info.: Air Force Systems Command; Foreign Technology Div.; Wright-Patterson AFB, OH, United States
Publisher Info.: United States
Subj. Category Text: BEHAVIORAL SCIENCES

Result Set Record: 54
Title Information: The "UFO' of July 24, 1981: A discussion with comrade Zhang Zhouseng
Author and Affiliation: Liu, Y.; Air Force Systems Command; Wright-Patterson AFB, OH, United States
Abstract: The theory of Zhang Zhousheng that many unidentified flying objects are a special phenomenon formed by the approach near the Earth of meteoroids from the meteoric swarm of Cassiopeia is severely criticized. It is argued that the theory is based on misconceptions about uniformity of apparent directions of individual meteoroids and the presence of charged particles in the meteoroid ionosphere.
Accession Number: 83N35576
Document ID (CASI): 19830027305
Report Number: AD-A128307; FTD-ID(RS)T-0231-83
Publication Date: Apr 11, 1983
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 9p
Document Language: English
Document Type: Journal Article
Financial Spons. Info.: Department of Energy; United States
Format and Price Code: Hardcopy - Price Code: A02
Imprint and Other Notes: Transl. into ENGLISH from Tianwen Aihaozhe (China), no. 9, Sep. 1982 p 11-13
NASA Major Term: METEOROIDS; UNIDENTIFIED FLYING OBJECTS

NASA Minor Term: CHARGED PARTICLES; FORECASTING; LUMINOSITY; METEOROLOGICAL PARAMETERS; POSITION (LOCATION); RADIANCE
Org. Source Info.: Air Force Systems Command; Foreign Technology Div.; Wright-Patterson AFB, OH, United States
Publisher Info.: United States
Subj. Category Text: METEOROLOGY AND CLIMATOLOGY

Result Set Record: 55
Title Information: Explanation of 'unidentified' satellites 1966-00B and 00C
Author and Affiliation: Waterman, M.
Accession Number: 82A38421
Document ID (CASI): 19820054886
Publication Date: Aug 1, 1982
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 2p
Document Language: English
Document Type: Journal Article
Imprint and Other Notes: British Interplanetary Society, Journal (Orbital Dynamics), vol. 35, Aug. 1982, p. 380, 381.
Miscellaneous Notes: p. 380, 381
NASA Major Term: SATELLITE TRACKING; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: CLUMPS; GROUND STATIONS; PERIGEES
Publisher Info.: United Kingdom
Source Publication: vol. 35/ Aug. 198
Subj. Category Text: ASTRONAUTICS (GENERAL)

Result Set Record: 56
Title Information: A brief survey of the solar system
Author and Affiliation: Owen, T.; New York, State University; Stony Brook, NY, United States
Abstract: These lectures review the physical and chemical characteristics of the objects found in the solar system today, with an attempt made to identify features that can be used to shed light on the processes involved in the origin and evolution of the entire system. Attention is also given to the debris left over from the formation process - the bodies that were too small or in the wrong place to become incorporated into planets. Included here are comets, asteroids, meteoroids, and the small satellites whose orbits suggest that they might be captured bodies. There is also a treatment of the origin and evolution of the planetary atmospheres. The search for exterrestrial intelligence is discussed.

Accession Number: 83A19463
Document ID (CASI): 19830038245
Publication Date: JAN 1, 1982
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 65p
Document Language: English
Document Type: Collected Works
Imprint and Other Notes: In: Formation of planetary systems. (A83-19451 06-91) Toulouse, Cepadues-Editions, 1982, p. 585, 587, 589-650.
NASA Major Term: COSMOCHEMISTRY; EXTRATERRESTRIAL INTELLIGENCE; PLANETARY ATMOSPHERES; PLANETARY EVOLUTION; SOLAR SYSTEM; TERRESTRIAL PLANETS
NASA Minor Term: AMINO ACIDS; ASTEROIDS; COMETS; EARTH (PLANET); GAS GIANT PLANETS; MARS (PLANET); METEORITES; TITAN; UNIDENTIFIED FLYING OBJECTS; VENUS (PLANET)
Publisher Info.: France
Source Publication: (SEE A83-19451 06-91, A83-19451 06-91)
Subj. Category Text: LUNAR AND PLANETARY EXPLORATION

Result Set Record: 57
Title Information: An explanation for the absence of extraterrestrials on earth
Author and Affiliation: Hart, M. H.; Trinity University; San Antonio, TX, United States
Abstract: Four categories of facts are explored for explaining the lack of observable extraterrestrial beings (ETs) on earth. The physical reasons are suggested to be the long travel times required by sublight-velocity spaceships, a problem that may be overcome by beings that live several millenia or that can be stored and reproduced from zygotes on arrival. Also, the energy requirements for interstellar travel, though large, are not an insurmountable difficulty. Sociologically, it is suggested that ETs have no interest in space travel, or they may have destroyed themselves with atomic wars, or the earth is being used as a wildlife preserve. No procedures exist to test these hypotheses, however. The consideration that ETs have not yet had time to find earth is discounted by calculations that show that another intelligent species in the Galaxy would have found earth if their space exploration efforts began at least 2,000,000 yr ago. It is concluded that if the earth has not yet been visited, then colonization of the Galaxy will most probably be done by humans, who may have the first advanced civilization in the Galaxy.
Accession Number: 83A41502
Document ID (CASI): 19830060284
Publication Date: JAN 1, 1982
Authorized Users: Publicly available
Security Classif.: Unclassified

Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 8p
Document Language: English
Document Type: Conference Proceedings
Imprint and Other Notes: IN: Extraterrestrials - Where are they? (A83-41501 19-88). Elmsford, NY, Pergamon Press, 1982, p. 1-8.
NASA Major Term: EXTRATERRESTRIAL INTELLIGENCE; EXTRATERRESTRIAL LIFE
NASA Minor Term: INTERSTELLAR TRAVEL; MILKY WAY GALAXY; SOCIOLOGY; UNIDENTIFIED FLYING OBJECTS
Publisher Info.: United States
Source Publication: (SEE A83-41501 19-88, A83-41501 19-88)
Subj. Category Text: SPACE SCIENCES (GENERAL)

Result Set Record: 58
Title Information: Observations of anomalous atmospheric phenomena in the USSR: Statistical analysis
Author and Affiliation: Gindilis, L. M.
Menkov, D. A.
Petrovskaya, I. G.
Abstract: A statistical analysis of information in 256 reports of observations of anomalous atmospheric phenomena (UFO) in the USSR is presented. Certain statistical regularities of these phenomena are brought out, some characteristics of which are similar to those obtained in other countries. It is concluded that there is a type of phenomenon with stable statistical properties. The further development of methods of obtaining more reliable data and the expansion of the initial information file and deeper statistical analysis of some phenomenon parameters are discussed.
Accession Number: 80X10058
Document ID (CASI): 19800076884
Report Number: NASA-TM-75761; PR-473
Contract Number: NASW-3199
Publication Date: Feb 1, 1980
Authorized Users: U.S. Government agencies and U.S. Government agency contractors only
Security Classif.: Unclassified
Restriction on Access: Limited Distribution
Available From: CASI
Copyright Indicator: Copyright
Database Load Date: Jul 11, 2003
Description: 59p
Document Language: English
Document Type: Technical Report

Financial Spons. Info.: NASA; United States
Format and Price Code: Hardcopy - Price Code: A04
Imprint and Other Notes: Transl. into ENGLISH of Nablyudeniya Anomalnykh Atmosfernykh Yavleniy v SSSR. Statisticheskiy Analiz. Rezultaty Obrabotki Pervoy Vyborki Nablyudatelnykh Dannykh (USSR), Pr-473, 1979 p 1-74
Miscellaneous Notes: Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prepared by Academy of Sciences USSR, Moscow
NASA Major Term: STATISTICAL ANALYSIS; U.S.S.R.; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: CHARACTERIZATION; CLASSIFICATIONS; RELIABILITY; STATISTICAL DISTRIBUTIONS; VISUAL OBSERVATION
Org. Source Info.: NASA; Washington, DC, United States
Publisher Info.: United States
Subj. Category Text: GEOPHYSICS

Result Set Record: 59
Title Information: East Europe Report: Scientific Affairs, no. 648
Accession Number: 80N71239
Document ID (CASI): 19800071150
Report Number: JPRS-74421
Publication Date: Oct 22, 1979
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 30p
Document Language: English
Document Type: Journal Issue
Financial Spons. Info.: United States
Format and Price Code: Hardcopy - Price Code: A03
Imprint and Other Notes: Transl. into ENGLISH from various East European articles
NASA Major Term: DATA LINKS; DATA TRANSMISSION; FERRIMAGNETS; MINICOMPUTERS; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: COMPUTER DESIGN; DATA RETRIEVAL; DATA SYSTEMS; MATERIALS HANDLING; MICROPROCESSORS
Org. Source Info.: Joint Publications Research Service; Arlington, VA, United States
Publisher Info.: United States
Subj. Category Text: GENERAL

Result Set Record: 60
Title Information: Observation of anomalous atmospheric phenomena in the USSR. Statistical analysis. Results of processing the first sampling of observation data

Author and Affiliation: Gindilis, L. M.
Menkov, D. A.
Petrovskaya, I. G.
Abstract: A statistical analysis of observations on anomalous atmospheric phenomena in the USSR is presented. The time characteristics and certain other data are similar to characteristics obtained by others, making it possible to draw a conclusion as to the presence of a certain class of phenomena which have stable statistical properties.
Accession Number: 79X10193
Document ID (CASI): 19790080760
Report Number: NASA-TM-75665; PR-473
Contract Number: NASW-3199
Publication Date: Aug 1, 1979
Authorized Users: U.S. Government agencies and U.S. Government agency contractors only
Security Classif.: Unclassified
Restriction on Access: Limited Distribution
Available From: CASI
Copyright Indicator: Copyright
Database Load Date: Jul 11, 2003
Description: 64p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: NASA; United States
Format and Price Code: Hardcopy - Price Code: A04
Imprint and Other Notes: Transl. into ENGLISH of ""Nablyudeniya Anomalnykh Atmosfernykh Yavleniy v SSSR. Statisticheskiy Analiz. Rezultaty Obrabotki Pervoy Vyborki Nablydatelnykh Dannykh", Rept. Pr-473 Academy of Sci. US
Miscellaneous Notes: Transl. by Kanner (Leo) Associates, Redwood City, Calif.
NASA Major Term: STATISTICAL ANALYSIS; U.S.S.R.; UNIDENTIFIED FLYING OBJECTS; VISUAL OBSERVATION
NASA Minor Term: OCCURRENCES; SPATIAL DISTRIBUTION; TIME; WEATHER
Org. Source Info.: NASA; Washington, DC, United States
Publisher Info.: United States
Subj. Category Text: GEOPHYSICS

Result Set Record: 61
Title Information: Computer tracking of objects moving in space
Author and Affiliation: Roach, J. W.
Aggarwal, J. K.; Texas, University; Austin, Tex., United States
Abstract: A method is developed to represent movement of convex blocks in three-dimensional space from a sequence of two-dimensional camera images. The goals are to determine the objects' movement toward or away from the camera as well as left/right and up/down movement in the image plane and to build models of the blocks. The

movement information is used as part of a hierarchical matching process that determines the correspondence of blocks between scenes.
Accession Number: 79A31978
Document ID (CASI): 19790047965
Report Number: AD-A072288; AFOSR-TR-79-0873
Contract Number: NSF ENG-74-04986; AF-AFOSR-77-3190EE
Publication Date: Apr 1, 1979
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 9p
Document Language: English
Document Type: Journal Article
Financial Spons. Info.: Department of Energy; United States
Imprint and Other Notes: IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. PAMI-1, Apr. 1979, p. 127-135.
Miscellaneous Notes: p. 127-135
NASA Major Term: COMPUTER TECHNIQUES; MAP MATCHING GUIDANCE; SPACE DETECTION AND TRACKING SYSTEM; THREE DIMENSIONAL MOTION; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: OCCULTATION; TELEVISION CAMERAS
Publisher Info.: United States
Source Publication: IEEE Transactions on Pattern Analysis and Machine Intelligence/ PAMI-1; Apr. 197
Subj. Category Text: MATHEMATICAL AND COMPUTER SCIENCES (GENERAL)

Result Set Record: 62
Title Information: Correlation techniques for deep space uncorrelated targets
Author and Affiliation: Sridharan, R.; Massachusetts Inst. of Tech.; Cambridge, MA, United States
Seniw, W. P.; Massachusetts Inst. of Tech.; Cambridge, MA, United States
Freed, A.; Massachusetts Inst. of Tech.; Cambridge, MA, United States
Abstract: The surveillance fences of SPACETRACK detect and track a large number of space objects that do not correlate with known objects in the satellite catalog. This note describes the techniques developed at the Millstone Hill Radar for the analysis of these uncorrelated targets.
Accession Number: 79N32425
Document ID (CASI): 19790024254
Report Number: AD-A071014; TN-1979-24; ESD-TR-79-37
Contract Number: F19628-78-C-0002
Publication Date: Mar 13, 1979
Authorized Users: Publicly available

Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 31p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Department of Energy; United States
Format and Price Code: Hardcopy - Price Code: A03
NASA Major Term: RADAR TRACKING; SATELLITE TRACKING; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: CORRELATION; DEEP SPACE; TARGET RECOGNITION
Org. Source Info.: Massachusetts Inst. of Tech.; Cambridge, MA, United States
Publisher Info.: United States
Subj. Category Text: COMMUNICATIONS AND RADAR

Result Set Record: 63
Title Information: Translations on Eastern Europe scientific affairs, no. 618
Accession Number: 79N74723
Document ID (CASI): 19790075215
Report Number: JPRS-72776
Publication Date: Feb 6, 1979
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 26p
Document Language: English
Document Type: Conference Proceedings
Financial Spons. Info.: United States
Format and Price Code: Hardcopy - Price Code: A03
Imprint and Other Notes: Transl. into ENGLISH from various East European articles
NASA Major Term: AUTOMATIC CONTROL; RESEARCH AND DEVELOPMENT; SATELLITE-BORNE INSTRUMENTS; SPACE PROGRAMS
NASA Minor Term: BULGARIA; CZECHOSLOVAKIA; HUNGARY; POLAND; UNIDENTIFIED FLYING OBJECTS
Org. Source Info.: Joint Publications Research Service; Arlington, VA, United States
Publisher Info.: United States
Subj. Category Text: GENERAL

Result Set Record: 64

Title Information: SETI and CETI - Problems of humanity
Author and Affiliation: Pesek, R.; Ceskoslovenska Akademie Ved; Prague, Czechoslovakia
Abstract: Problems encountered in the studies of extraterrestrial intelligence are examined. Four types of communication methods are described: (1) direct contact, (2) communication satellites, (3) by receiving communication from other solar systems, and (4) interplanetary communication employing radio waves. Attention is given to theoretical and experimental investigations of CETI as well as to archeology and UFOs
Accession Number: 80A13995
Document ID (CASI): 19800029825
Publication Date: JAN 1, 1979
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 4p
Document Language: German
Document Type: Journal Article
Foreign Title Info.: SETI und CETI - Probleme der Menschheit [German]
Imprint and Other Notes: Astronautik, vol. 16, no. 3, 1979, p. 68-71. In German.
Miscellaneous Notes: p. 68-71. In Germ
NASA Major Term: AEROSPACE SCIENCES; EXTRATERRESTRIAL COMMUNICATION; EXTRATERRESTRIAL INTELLIGENCE; PROJECT SETI
NASA Minor Term: ARCHAEOLOGY; COMMUNICATION SATELLITES; EXTRATERRESTRIAL RADIO WAVES; INTERPLANETARY COMMUNICATION; SOLAR SYSTEM; UNIDENTIFIED FLYING OBJECTS
Publisher Info.: Germany
Source Publication: Astronautik/ 16; 3, 19; 1979
Subj. Category Text: SPACE SCIENCES (GENERAL)

Result Set Record: 65
Title Information: A mind/brain/matter model consistent with quantum physics and UFO phenomena
Author and Affiliation: Bearden, T. E.; Computer Sciences Corp.; Huntsville, AL, United States
Abstract: The author introduces a speculative model of mind and matter and their interaction that is consistent with the experimental basis of physics, and which offers mechanisms for paranormal phenomena of all types, including UFO phenomena. Certain conclusions are reached by a new fourth law of logic, which is briefly described and summarized. A new photon interaction model of quantized observable change is also presented. A solution to the problem of the nature of mind is generated, using the author's fourth law of logic, and a seven-dimensional hyperspatial physical model of a living biosystem is developed. Using this basic model, an infinite-dimensional cotemporal

hyperspatial model of the physical universe complete with all its life forms is constructed. Levels of unconsciousness-including the collective human species unconscious--emerge naturally as types of crosstalk between hyperframes. By the author's formula, the psychokinetic power of a mind level increases exponentially as the number of biosystem stages involved. At the level of the collective human species unconscious, the psychokinesis is sufficient to materialize symbolic tulpoids (thought forms), given a sufficient stress stimulus in large groups. Using the cold war as the major stress stimulus on mankind since World War II, the author shows that most major UFO waves in the literature precisely fit the model.
Accession Number: 80N14711
Document ID (CASI): 19800006453
Report Number: AD-A068988
Publication Date: JAN 1, 1979
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 41p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: United States
Format and Price Code: Hardcopy - Price Code: A03
NASA Major Term: HUMAN BEHAVIOR; LOGIC; PERCEPTION; PSYCHOPHYSICS
NASA Minor Term: CONSCIOUSNESS; MODELS; QUANTUM THEORY; STRESS (PSYCHOLOGY); UNIDENTIFIED FLYING OBJECTS
Org. Source Info.: Computer Sciences Corp.; Huntsville, AL, United States
Publisher Info.: United States
Subj. Category Text: BEHAVIORAL SCIENCES

Result Set Record: 66
Title Information: On the likelihood of a human interstellar civilization
Author and Affiliation: Molton, P. M.
Abstract: The technology for the construction of manned spacecraft capable of sub-light interstellar travel is likely to come on-line before the end of this century. The question of whether or not such a spacecraft will be constructed becomes, therefore, not scientific but political. It is pointed out that current trends are running against the development of new technologies in general, and against government spending for anything other than short range projects with an immediate economic advantage in particular. Also contributing to the lack of motivation for more ambitious, i.e., interstellar, space endeavors are civil service inertia and governmental control of basic science, which has recently sought to limit research almost as much as it has sought to encourage it, e.g., DNA recombination, NASA cutbacks, a reliance upon modifications of old energy technology rather than the

development of new energy sources, etc. Mitigating this trend, however, is a growing public interest in interstellar contact, mostly evidenced in popular books and movies, especially those dealing with UFO phenomena. Curiosity on the part of large numbers of people, including scientists and many government officials, to see 'what's out there', could lead to renewal of basic research aimed at interstellar travel.
Accession Number: 78A37038
Document ID (CASI): 19780053129
Publication Date: Jun 1, 1978
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 6p
Document Language: English
Document Type: Journal Article
Imprint and Other Notes: British Interplanetary Society, Journal (Interstellar Studies), vol. 31, June 1978, p. 203-208.
Miscellaneous Notes: p. 203-208
NASA Major Term: INTERSTELLAR TRAVEL; MANNED SPACE FLIGHT; SPACE EXPLORATION
NASA Minor Term: ECONOMIC FACTORS; POLITICS; SOCIAL FACTORS
Publisher Info.: United Kingdom
Source Publication: vol. 31/ June 197
Subj. Category Text: SPACE SCIENCES (GENERAL)

Result Set Record: 67
Title Information: Our extraterrestrial heritage: From UFO's to space colonies; Proceedings of the Joint Symposium, Los Angeles, Calif., January 28, 1978
Abstract: The scientific aspects of UFO research are considered with reference to the Zeta Reticuli episode, UFO drawings by eyewitnesses and noneyewitnesses, instrumented UFO monitoring, interstellar contact in an evolving universe, and the search for extraterrestrial civilizations. Consideration is also given to the technology and economics of space industrialization, and to various aspects of the development of space habitats.
Accession Number: 78A49776
Document ID (CASI): 19780065867
Publication Date: JAN 1, 1978
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003

Description: 120p
Document Language: English
Document Type: Conference Proceedings
Financial Spons. Info.: United States
Imprint and Other Notes: Symposium sponsored by the American Institute of Aeronautics and Astronautics and World Futures Society. Los Angeles, American Institute of Aeronautics and Astronautics, Inc., 1978, 120 p. (For individual items see A78-49777 to A78-49780)
Meeting Information: Joint Symposium of Our extraterrestrial heritage: From UFO's to space colonies; January 28, 1978; Los Angeles, CA; US
Meeting Spons. Info.: American Institute of Aeronautics and Astronautics
World Futures Society
NASA Major Term: AEROSPACE ENVIRONMENTS; BIOASTRONAUTICS; CONFERENCES; EXTRATERRESTRIAL LIFE; SPACE COLONIES; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: ECONOMIC FACTORS; EXTRATERRESTRIAL INTELLIGENCE; HABITATS; HUMAN FACTORS ENGINEERING; NASA PROGRAMS; ORBITAL ASSEMBLY; SPACE COMMERCIALIZATION; SPACE INDUSTRIALIZATION; SPACE PROCESSING
Publisher Info.: United States
Subj. Category Text: ASTRONAUTICS (GENERAL)

Result Set Record: 68
Title Information: The absence of extraterrestrials on earth and the prospects for CETI
Author and Affiliation: Schwartzman, D. W.; Howard University; Washington, D.C., United States
Abstract: The author assumes that there exists a vast network of intelligent civilizations (the Galactic Club) in productive mutual contact and that UFOs are of extraterrestrial intelligent (ETI) origin and flown by members of the Galactic Club. He then suggests that the reason for the lack of official contact between UFOs of ETI origin and us is that they are merely surveying us because we are on the verge of becoming a member of the Galactic Club. He makes two proposals for a CETI strategy: (1) carry out radio search for Type II and Type III civilizations among nearer galaxies and search for Bracewell probes, and (2) carry out serious study of the UFO phenomenon to produce 'harder' data (e.g., spectra from glowing UFOs), including a systematic search using radar networks, infrared sensors from space, etc.
Accession Number: 78A18386
Document ID (CASI): 19780034477
Publication Date: Dec 1, 1977
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003

Description: 3p
Document Language: English
Document Type: Journal Article
Imprint and Other Notes: Icarus, vol. 32, Dec. 1977, p. 473-475.
Miscellaneous Notes: p. 473-475
NASA Major Term: EXTRATERRESTRIAL COMMUNICATION; EXTRATERRESTRIAL LIFE
NASA Minor Term: MILKY WAY GALAXY; RADIO COMMUNICATION; UNIDENTIFIED FLYING OBJECTS
Publisher Info.: United States
Source Publication: Icarus/ 32; Dec. 197
Subj. Category Text: SPACE SCIENCES (GENERAL)

Result Set Record: 69
Title Information: Stanford workshop on extraterrestrial civilization - Opening a new scientific dialog
Author and Affiliation: Carlson, J. B.; Maryland, University; College Park, Md., United States
Sturrock, P. A.; Stanford University; Stanford, Calif., United States
Abstract: The existence of extraterrestrial civilization (ETC), interstellar communication, human contact with ETC, unidentified flying object (UFO) evidence, the evaluation of UFO phenomena, and the assessment of our ignorance about the universe are discussed. The organization of the Stanford workshop (August 29-30, 1974) convened to study these topics is also described. There were two groups of scientists: those considering physical, astronomical, and biological theoretical knowledge relative to ETC and searching for extraterrestrial radio signals; and those pursuing the UFO problem by analyzing eyewitness reports and photographs.
Accession Number: 75A43900
Document ID (CASI): 19750059828
Publication Date: Jul 1, 1975
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 12p
Document Language: English
Document Type: Journal Article
Imprint and Other Notes: Origins of Life, vol. 6, July 1975, p. 459-470.
Miscellaneous Notes: p. 459-470
NASA Major Term: EXTRATERRESTRIAL COMMUNICATION; EXTRATERRESTRIAL LIFE; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: COSMOLOGY; EXTRASOLAR PLANETS; INTERSTELLAR TRAVEL; UNIVERSE

Publisher Info.: Netherlands
Source Publication: Origins of Life/ 6; July 197
Subj. Category Text: SPACE BIOLOGY

Result Set Record: 70
Title Information: Extrinsic Factors in UFO-Reporting
Author and Affiliation: Saunders, D. R.; Chicago Univ.; Industrial Relations Center; Chicago, IL United States
Abstract: Using the method of stepwise multiple correlation analysis, five factors are identified having empirically-demonstrable effects on the production of UFO-reports; other factors have been simultaneously set aside as irrelevant. In order to maximize the number of reports, it is helpful (a) to assemble a large number of potential witnesses, (b) to educate them at least through high school, (c) to station them where they can see, (d) to give them a place to report, and (e) to provide one or more examples of such reports. Data on these factors alone suffice to provide a multiple correlation of 0.82 with actual numbers of UFO-reports produced in US counties, and they come at least very close to accounting for the statistical reliability of this criterion. Several hypotheses predicated on alternative models of the UFO-reporting process are affirmatively rejected by the data reported here.
Document ID (CASI): 19990054466
Report Number: AIAA Paper 75-43
Publication Date: 1975
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Reprint
Financial Spons. Info.: Chicago Univ.; Industrial Relations Center; Chicago, IL United States
Meeting Information: 13th Aerospace Sciences; 20-22 Jan. 1975; Pasadena, CA; United States
Meeting Spons. Info.: American Inst. of Aeronautics and Astronautics; New York, NY United States
NASA Major Term: UNIDENTIFIED FLYING OBJECTS; EXTRATERRESTRIAL INTELLIGENCE; PROJECT SETI
NASA Minor Term: CORRELATION; STATISTICAL TESTS
Org. Source Info.: Chicago Univ.; Industrial Relations Center; Chicago, IL United States
Subj. Category Text: General

Result Set Record: 71
Title Information: The Emerging Picture of the UFO Problem

Author and Affiliation: Hynek, J. Allen; Center for UFO Studies; Evanston, IL United States
Abstract: This paper intends to present the elements of the UFO (Unidentified Flying Object) problem, today. Truly unidentified reports of events in the air, and close to the ground, exist, events worldwide in origin and appearing to fit a relatively small number of patterns. The data, amenable to study of an interdisciplinary nature, involving a number of scientific disciplines and probably necessitating new departures in methodology, have been imperfectly studied in the past and have been virtually ignored by science. An increasing interest in, and open-mindedness about the UFO phenomenon, whatever its cause, on the part of established scientists and the educated public exists, and there has been created a Center for UFO Studies, whose activities are guided by a scientific board of established scientists in their respective disciplines. The outstanding objective of the attack on the UFO problem is the formulation of a hypothesis -- or hypotheses -- that encompasses the established parameters of the UFO phenomenon -- no matter how far beyond the boundaries of present day science it may have to be.
Document ID (CASI): 19990047750
Report Number: AIAA Paper 75-41
Publication Date: 1975
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Reprint
Financial Spons. Info.: Center for UFO Studies; Evanston, IL United States
Meeting Information: Aerospace Sciences; 20-22 Jan. 1975; Pasadena, CA; United States
Meeting Spons. Info.: American Inst. of Aeronautics and Astronautics; New York, NY United States
NASA Major Term: UNIDENTIFIED FLYING OBJECTS; EXTRATERRESTRIAL INTELLIGENCE; PROJECT SETI; INTERSTELLAR COMMUNICATION; INTERPLANETARY COMMUNICATION; EXTRATERRESTRIAL COMMUNICATION; INFORMATION DISSEMINATION
NASA Minor Term: HYPOTHESES; REPORTS; PROVING; DOCUMENTS; DOCUMENTATION
Org. Source Info.: Center for UFO Studies; Evanston, IL United States
Subj. Category Text: General

Result Set Record: 72
Title Information: Unidentified Flying Objects: The Physical Evidence
Author and Affiliation: Phillips, Ted R., Jr.; Center for UFO Studies; Evanston, IL United States

Abstract: It has been stated that little, if any, real evidence exists to prove the case for the UFO (Unidentified Flying Objects). While it is true that there is no direct proof, there is tangible evidence available for study. This evidence is to be found in the physical trace cases, reports involving a UFO landing and the disturbance of soil or plants at the alleged landing site. In this paper I have eliminated a rather detailed statistical study of the trace cases as this information is to be published by the Center For UFO Studies in the near future. Evaluation of the patterns presented in this report should make it quite clear that the physical trace landing cases are quite numerous and on the increase. During the past twenty-five years the trace reports have not received a great deal of publicity. Many of these cases are not quite sensational enough for public consumption. I feel that the study presents significant statistical patterns. Examples of high quality cases are presented which have not reached publication in any of the prominent journals and certainly no scientific journals. I trust the information presented will at least stimulate interest in this one piece of the UFO puzzle.
Document ID (CASI): 19990047259
Report Number: AIAA Paper 75-45
Publication Date: 1975
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Reprint
Financial Spons. Info.: Center for UFO Studies; Evanston, IL United States
Meeting Information: Aerospace Sciences; 20-22 Jan. 1975; Pasadena, CA; United States
Meeting Spons. Info.: American Inst. of Aeronautics and Astronautics; New York, NY United States
NASA Major Term: UNIDENTIFIED FLYING OBJECTS; EXTRATERRESTRIAL INTELLIGENCE; PROJECT SETI
NASA Minor Term: INTERSTELLAR COMMUNICATION; EXTRATERRESTRIAL COMMUNICATION; INTERPLANETARY COMMUNICATION; VISUAL OBSERVATION; RADIO TELEMETRY
Org. Source Info.: Center for UFO Studies; Evanston, IL United States
Subj. Category Text: General

Result Set Record: 73
Title Information: Basic Patterns in UFO Observations
Author and Affiliation: Poher, Claude; Centre National d'Etudes Spatiales; Scientific Projects Div.; Toulouse, France
Vallee, Jacques; Center for UFO Studies; Evanston, IL United States
Abstract: This paper presents the view that (1) a significant proportion of the thousands of UFO reports analyzed by the authors come from witnesses who have really observed

an object in the sky or at ground level; (2) the objects these witnesses have seen have characteristics very different from all identifiable objects and phenomena; (3) the phenomenon is of high scientific interest; and (4) a systematic research approach can be defined. These conclusions are based on many years of research into the phenomenon, in the course of which the authors have had at their disposal the official Air Force files of the United States and of France, as well as files of several reliable private organizations. The paper presents the results of computer statistics obtained independently, and it describes some correlations between geomagnetic disturbances and UFO observations.
Document ID (CASI): 19990046394
Report Number: AIAA Paper 75-42
Publication Date: 1975
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Reprint
Financial Spons. Info.: Centre National d'Etudes Spatiales; Toulouse, France
Meeting Information: Aerospace Sciences; 20-22 Jan. 1975; Pasadena, CA; United States
Meeting Spons. Info.: American Inst. of Aeronautics and Astronautics; New York, NY United States
NASA Major Term: UNIDENTIFIED FLYING OBJECTS; EXTRATERRESTRIAL INTELLIGENCE; PROJECT SETI
NASA Minor Term: GEOMAGNETISM; MAGNETIC DISTURBANCES; GOVERNMENTS; ORGANIZATIONS; DOCUMENTS; UNITED STATES; FRANCE
Org. Source Info.: Centre National d'Etudes Spatiales; Toulouse, France
Subj. Category Text: General

Result Set Record: 74
Title Information: A scientist in the cockpit - The case history and analysis of a UFO sighting.
Author and Affiliation: Wichman, H.; California State College; San Bernardino, Calif., United States
Abstract: A UFO sighting took place during a night instrument training flight on which the author served as flight instructor. The UFO was in the form of a bright light approaching on a collision course at a very high rate of speed - a rapid deceleration and hovering - a rapid acceleration away from the author's plane followed by another deceleration and hovering. This apparent reconnoitering activity was repeated approximately ten times after which the object failed to reappear. The paper describes the struggle the author went through, after the first stages of alarm subsided, in an attempt to explain by means of scientific principles what was being seen. A satisfactory tentative

explanation was discovered and the method by which this came about is discussed as is the manner in which the explanation was tested in the cockpit.
Accession Number: 72A22646
Document ID (CASI): 19720038980
Publication Date: Dec 1, 1971
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 6p
Document Language: English
Document Type: Journal Article
Imprint and Other Notes: Space Life Sciences, vol. 3, Dec. 1971, p. 165-170.
Miscellaneous Notes: p. 165-170
NASA Major Term: COLLISION AVOIDANCE; INSTRUMENT FLIGHT RULES; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: CASE HISTORIES; ILLUSIONS; PILOT PERFORMANCE
Publisher Info.: Netherlands
Source Publication: Space Life Sciences/ 3; Dec. 197
Subj. Category Text: BIOTECHNOLOGY

Result Set Record: 75
Title Information: UFO's and related subjects - An annotated bibliography
Author and Affiliation: Catoe, L. E.; Library of Congress; Washington, DC, United States
Abstract: Annotated bibliography of conference proceedings, journal articles, books, and manuscripts on unidentified flying objects
Accession Number: 69N37037
Document ID (CASI): 19690027659
Report Number: AD-688332; AFOSR-68-1656
Contract Number: F44620-67-C-0035
Publication Date: Jul 1, 1969
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 415p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Department of Energy; United States
Miscellaneous Notes: PREPARED IN COOPERATION WITH COLORADA UNIV.

NASA Major Term: OPTICAL ILLUSION; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: ABSTRACTS; CONFERENCES; PERIODICALS; SOLAR SYSTEM
Org. Source Info.: Library of Congress; Science And Technology Div.; Washington, DC, United States
Publisher Info.: United States
Subj. Category Text: SPACE SCIENCES

Result Set Record: 76
Title Information: Identification of the flying object of 18 October 1968
Abstract: Visual and photographic tracking of unidentified flying object over Yugoslavia on 18 Oct. 1968
Accession Number: 70N22039
Document ID (CASI): 19700012734
Publication Date: Jul 1, 1969
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 42p
Document Language: Serbo-croatian; Croatian
Document Type: Technical Report
Financial Spons. Info.: Yugoslavia
Foreign Title Info.: Identifikacija leteceg objekta od 18 oktobra 1968 godine [Serbo-croatian]
Format and Price Code: Hardcopy - Price Code: A03
NASA Major Term: HIGH ALTITUDE BALLOONS; PHOTOGRAPHIC TRACKING; UNIDENTIFIED FLYING OBJECTS; VISUAL OBSERVATION
NASA Minor Term: ASTRONOMY; RADAR TRACKING; YUGOSLAVIA
Org. Source Info.: Akademski Astronomsko-Astronautitski Klub; Sarajevo, Yugoslavia
Publisher Info.: Yugoslavia
Subj. Category Text: SPACE SCIENCES

Result Set Record: 77
Title Information: Review of the University of Colorado report on unidentified flying objects Special report
Author and Affiliation: Clemence, G. M.; National Academy of Sciences - National Research Council; Washington, DC, United States
et al.
Abstract: University of Colorado report on unidentified flying objects reviewed by National Academy of Sciences
Accession Number: 69N34782

Document ID (CASI): 19690025404
Report Number: AD-688541; AFOSR-69-1276TR
Contract Number: F18600-67-C-0071
Publication Date: Jan 1, 1969
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 10p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Department of Energy; United States
Format and Price Code: Hardcopy - Price Code: A02
NASA Major Term: IMAGES; RESEARCH PROJECTS; SUMMARIES; UNIDENTIFIED FLYING OBJECTS; VISUAL PERCEPTION
NASA Minor Term: OPTICAL COMMUNICATION; THEOREM PROVING
Org. Source Info.: National Academy of Sciences - National Research Council; National Academy Of Sciences Panel.; Washington, DC, United States
Publisher Info.: United States
Subj. Category Text: SPACE SCIENCES

Result Set Record: 78
Title Information: Sociological aspects of exobiology.
Author and Affiliation: Wagner, B. M.
Abstract: UFOs from sociological viewpoint, stressing need for international cooperation in exobiological research
Accession Number: 69A32974
Document ID (CASI): 19690054985
Publication Date: JAN 1, 1969
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 14p
Document Language: English
Document Type: Other
Imprint and Other Notes: IN- EXOBIOLOGY- THE SEARCH FOR EXTRATERRESTRIAL LIFE, AMERICAN ASTRONAUTICAL SOCIETY AND AMERICAN ASSN. FOR THE ADVANCEMENT OF SCIENCE, SYMPOSIUM, NEW YORK, N.Y., DEC. 30, 1967, PROCEEDINGS. P. 117-130. <A69-32967 17-04<

Meeting Information: EXOBIOLOGY- THE SEARCH FOR EXTRATERRESTRIAL LIFE, AMERICAN ASTRONAUTICAL SOCIETY AND AMERICAN ASSN. FOR THE ADVANCEMENT OF SCIENCE, SYMPOSIUM; DEC. 30, 1967; NEW YORK, NY
Meeting Spons. Info.: AMERICAN ASTRONAUTICAL SOCIETY AND AMERICAN ASSN. FOR THE ADVANCEMENT OF SCIENCE
Miscellaneous Notes: /AAS SCIENCE AND /AAS SCIENCE AND TECHNOLOGY SERIES. VOLUME 19/, DATE- 1969.
NASA Major Term: EXOBIOLOGY; INTERNATIONAL COOPERATION; SOCIOLOGY; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: AIR DEFENSE; CIVIL DEFENSE; CONFERENCES; OPTICAL ILLUSION
Publisher Info.: TARZANA, CALIF., ASTRONAUTICAL SOCIETY;United States
Subj. Category Text: GENERAL

Result Set Record: 79
Title Information: Symposium on unidentified flying objects
Abstract: Symposium on unidentified flying objects presented before House Committee on Science and Astronautics
Accession Number: 68N33382
Document ID (CASI): 19680023910
Report Number: GPO-97-818
Publication Date: JAN 1, 1968
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 254p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: United States
Format and Price Code: Hardcopy - Price Code: A12
Imprint and Other Notes: HEARINGS BEFORE COMM. ON SCI. AND ASTRONAUTICS, 90TH CONGR., 2D SESS., NO. 7, 29 JUL. 1968
Meeting Information: HEARINGS BEFORE COMM. ON SCI. AND ASTRONAUTICS, 90TH CONGR., 2D SESS., NO. 7; 29 JUL. 1968; WASHINGTON, DC; UNITED STATES
NASA Major Term: CONFERENCES; FOREIGN BODIES; UNIDENTIFIED FLYING OBJECTS; VISUAL OBSERVATION
NASA Minor Term: ATMOSPHERIC ENTRY; CELESTIAL BODIES; GHOSTS; ILLUSIONS; PHENOMENOLOGY; RADAR ECHOES; SPACE DEBRIS; SPACECRAFT

Org. Source Info.: Committee on Science and Astronautics (U.S. House); Washington, DC, United States
Publisher Info.: GPO;WASHINGTON;United States
Subj. Category Text: GENERAL

Result Set Records: 1-79 of 79

largest variety of phases in the pure U system where also a nematic phase is present. No such phase is observed when 1/3 of the U particles are replaced by R particles, as well as in the mixture 2/3R-1/3U and in the pure R system. At the lowest temperatures investigated all systems show a lattice phase except the mixture 1/3R-2/3U, whose organization is better described as a disordered columnar phase. [copyright] 2002 American Institute of Physics.
Document ID (CASI): 20020091121
Publication Date: December 22, 2002
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Copyright Indicator: Copyright
Database Load Date: Jun 03, 2003
Document Language: English
Document Type: Journal Article
NASA Major Term: COMPUTERIZED SIMULATION; CRYSTAL STRUCTURE; LIQUID CRYSTALS; MONTE CARLO METHOD; PHASE TRANSFORMATIONS; POTENTIAL ENERGY; STATISTICAL MECHANICS
Non-NASA Terms: Monte Carlo methods; statistical mechanics; potential energy functions; discotic liquid crystals; liquid crystal phase transformations
Source Publication: The Journal of Chemical Physics (ISSN 0021-9606) / Volume 117; no. 24; 11388-11395
Subj. Category Text: Solid-State Physics

Result Set Record: 2
Title Information: GBS IOTE Feed Measurements
Author and Affiliation: Borge, T. W.
Abstract: The Ka-Band (30/20 GHz) terminal was used to conduct I, O, T, and E of the Global Broadcast System (GBS) package on UHF Follow-on (UFO) satellites, flights 8, 9, and 10. This terminal has been transferred to Lincoln Laboratory through the Milsatcom Joint Program Office at the USAF Space and Missile Center (AFSMC). At Lincoln Laboratory, the terminal is to be evaluated for possible use in on-orbit checkout/experimentation with the Ka-band portion of the Wideband Gap Filler Satellites (expected to launch in 2004). These satellites use the government 20.2-21.2 GHz (downlink) and 30-31 GHz (uplink) frequency allocations. This report describes the test and evaluation of the Ka-Band Terminal dual frequency feed at Lincoln Laboratory's Antenna Test Range and identifies some deficiencies that will need to be addressed prior to use with the Wideband Gapfiller system.
Document ID (CASI): 20010097872
Report Number: AD-A391446; TR-1073; ESC-TR-2000-056
Contract Number: F19628-00-C-0002
Publication Date: May 23, 2001
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited

Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 25p ; Original contains color plates
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Space and Missile Systems Organization; El Segundo, CA United States
Format and Price Code: Hardcopy - Price Code: A03
NASA Major Term: COMMUNICATION SATELLITES; COMMUNICATION NETWORKS; EXTREMELY HIGH FREQUENCIES
NASA Minor Term: EVALUATION; PERFORMANCE TESTS; RADIO RECEIVERS; MILITARY SPACECRAFT; SPACE COMMUNICATION; TEST RANGES; UNIDENTIFIED FLYING OBJECTS; ENERGY GAPS (SOLID STATE)
Org. Source Info.: Massachusetts Inst. of Tech.; Lincoln Lab.; Lexington, MA United States
Subj. Category Text: Communications and Radar

Result Set Record: 3
Title Information: Vector control methods for induction machines: An overview
Author and Affiliation: Santisteban, J. A.; Fluminense Federal University UFF/TEE/PGMEC; Niteroi 24210-240 Brazil
Stephan, R. M.
Abstract: In the last three decades, different vector control methods [field-oriented control (FOC), field acceleration method (FAM), universal field orientation (UFO), direct self control (DSC) and Takahashi method among others) have been proposed. It is difficult for students and nonspecialists to understand the drawbacks and advantages of each one. With this in mind, the objective of this paper is to propose a clear classification and comparison of them.
Document ID (CASI): 20010102768
Publication Date: May 2001
Authorized Users: NASA personnel and NASA contractors only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Journal Article
Imprint and Other Notes: IEEE Trans Educ, Volume 44 (No. 2), pp. 170-175, May 2001.
NASA Major Term: MECHANICAL DRIVES; PROCESS CONTROL (INDUSTRY); SELF ADAPTIVE CONTROL SYSTEMS; EDUCATION; ENGINEERS; DIRECTIONAL CONTROL; UNIDENTIFIED FLYING OBJECTS
Non-NASA Terms: Electric drives; Process control; Self adjusting control systems; Engineering education; Students; Vector control methods; Field oriented control (FOC)

Source Publication: IEEE Trans Educ (ISSN 0018-9359) / Volume 44; No. 2; 170-175
Subj. Category Text: Electronics and Electrical Engineering

Result Set Record: 4
Title Information: Understanding UFO/ET/free energy secrecy
Author and Affiliation: Greer, S. M.
Abstract: To date, it has not been difficult to make a compelling case for the reality of UFOs per se. What has been a challenge is that of elucidating the architecture of secrecy related to UFOs. This paper details some key points regarding this secrecy, why it has been imposed and why it is so difficult for the controlling interests within covert programs to reverse policy and allow disclosure.
Document ID (CASI): 20010116144
Publication Date: 2001
Authorized Users: NASA personnel and NASA contractors only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Journal Article
Imprint and Other Notes: Journal of New Energy, Volume 5 (No. 4), pp. 53-59, 2001.
NASA Major Term: TECHNOLOGIES; SPACECRAFT; MILITARY TECHNOLOGY; EXPLOSIVES; UNIDENTIFIED FLYING OBJECTS
Non-NASA Terms: Nuclear energy; Technology; Spacecraft; Military applications; Explosives; Secrecy; Nuclear arms race
Source Publication: Journal of New Energy (ISSN 1086-8259) / Volume 5; No. 4; 53-59
Subj. Category Text: Energy Production and Conversion

Result Set Record: 5
Title Information: Full composite isotensoid pressure vessels or how composites can compete with steel
Author and Affiliation: Koppert, Jan-Jaap; Advanced Lightweight Engineering
Beukers, Adriaan
Abstract: Advanced Lightweight Engineering has developed a full composite LPG container in close conjunction with the TU Delft. The container is suited for automotive use and has a so-called 'UFO' shape, which enables the container to be placed in the spare wheel compartment. The weight reduction is about 80% compared to a steel LPG container which results in better car handling, lower fuel consumption, lower road taxes (in the Netherlands) and easier installation. The container offers a volume of 56 liters in combination with a total weight of only eight kilograms and a cost price close to a steel container. The special design is characterized by an isotensoid shape. The liner is used as a gastight inner part as well as winding mandrel. The dry wound carbon fibers carry the mechanical loads where the rubber coating gives protection against handling loads. The

design philosophy is 'safe life and fail safe' which implies that the failure mechanism is a non-explosive one. Normal working pressure for LPG (mixture of propane and butane) is about 8 bar. Design pressure is 80 bar. This concept has been successfully tested in a bonfire and can withstand an impact at 50 km/h on a sharp wedge.
Document ID (CASI): 20020013659
Publication Date: Nov, 2000
Authorized Users: U.S. Government agencies and U.S. Government agency contractors only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 03, 2003
Description: 9p
Document Language: English
Document Type: Journal Article
NASA Major Term: ISOTENSOID STRUCTURES; PRESSURE VESSELS; CRUDE OIL; LIQUEFIED GASES; CARBON FIBER REINFORCED PLASTICS; RUBBER; STEELS
NASA Minor Term: FAILURE ANALYSIS; PRESSURE; PROPANE; BUTANES; IMPACT TESTS
Non-NASA Terms: Pressure vessels; Isotensoid pressure vessels; Advanced lightweight engineering; Gastight inner part; Winding mandrel
Publisher Info.: SAMPE;Covina, CA;United States
Source Publication: SAMPE Journal (ISSN 0091-1062) / Volume 36; no. 6; p. 8-16
Subj. Category Text: Propellants and Fuels

Result Set Record: 6
Title Information: Global Broadcast Service (GBS) Blockage Assessment for USS Coronado (AGF-11); Final Report
Author and Affiliation: Axford, R. A., Jr.
Fitzgerald, G. B.
Abstract: This report examines the impact of USS Coronado's two Global Broadcast Service (GBS) topside antenna locations on the availability of broadcast services. Blockage in the present locations limits global average line-of-sight availability (GALA) to 83.7% in calm seas, and to 78.3% and 68.2% in Sea States 4 and 6, respectively. However, the local average line-of-sight availability (LALA) for these topside locations drops to -50% in large regions in the ship's area of responsibility (AOR) and to approx. 10% in areas around the subsatellite point. Moving one or both of the antennas to alternative locations can improve these results. This report also presents GALA and LALA results for a pro- posed new pair of antenna locations for which the LALA never drops below 81.4% at any point in the field-of-regard of the UHF Follow-On (UFO)/GBS satellites for Sea State 6. Since associated topside electromagnetic compatibility (EMC) studies have been completed with positive results, we recommend that Coronado's GBS antennas be moved to these new positions.

Document ID (CASI): 20010019087
Report Number: AD-A385289; SSC/SD-TR-1842
Publication Date: Nov. 2000
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 37p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Space and Naval Warfare Systems Command; Washington, DC United States
Format and Price Code: Hardcopy - Price Code: A03
Miscellaneous Notes: Prepared in collaboration with The Mitre Corp.
NASA Major Term: BROADCASTING; ARTIFICIAL SATELLITES; ELECTROMAGNETIC COMPATIBILITY; POSITION (LOCATION)
NASA Minor Term: LINE OF SIGHT; ULTRAHIGH FREQUENCIES
Org. Source Info.: Space and Naval Warfare Systems Center; San Diego, CA United States
Subj. Category Text: Communications and Radar

Result Set Record: 7
Title Information: Space and life
Author and Affiliation: Iwata, Tsutomu; National Space Development Agency; Planning and Coordination Dept.; Tokyo Japan
Abstract: This lecture discussed a wide range of topics about space and life. In 'From imagination to science' section, the possibilities of the birth of Earth-like planets and the presence of life were discussed, based on the verification of the hypothesis that the birth of stellar systems and the birth of planetary systems occurred simultaneously. In the discussion of 'Conditions of the existence of life', life was defined as a system in which regular structures of materials duplicated themselves by absorbing surrounding materials. Based on the identical nature of DNA (Deoxyribonucleic Acid) in every bio-organism, it was suggested that only one kind of life only occurred once on the Earth. In this connection, the mathematical hypothesis of automata proposed by von Neumann was mentioned. In addition, the possibility and survey of Mars concerning the existence of life were described. On the subject 'Existence of aliens', various hypothetical phenomena with the assumption of the existence of UFO (Unidentified Flying Object) were discussed.
Document ID (CASI): 20020023818
Publication Date: Jul. 14, 2000
Authorized Users: U.S. Government agencies and U.S. Government agency contractors only
Security Classif.: Unclassified

Restriction on Access: Limited by Purchase or Exchange Agreements
Availability Notes: US Distribution and Sales Only
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jul 18, 2004
Description: 8p
Document Language: Japanese
Document Type: Conference Paper
Financial Spons. Info.: National Space Development Agency; Planning and Coordination Dept.; Tokyo Japan
Foreign Title Info.: Uchu to seimei [Japanese]
Format and Price Code: Hardcopy - Price Code: A02
NASA Major Term: AEROSPACE ENGINEERING; JAPANESE SPACE PROGRAM; AUTOMATA THEORY; BIOASTRONAUTICS; DEOXYRIBONUCLEIC ACID; EXOBIOLOGY; EXTRATERRESTRIAL LIFE; MANNED MARS MISSIONS; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: SPACECRAFT COMPONENTS; STRUCTURAL ENGINEERING; AEROSPACE ENVIRONMENTS; BIOLOGICAL EVOLUTION; BREEDING (REPRODUCTION); EUROPA; INTERSTELLAR SPACE; SPACE COLONIES; SPACE HABITATS
Org. Source Info.: National Space Development Agency; Planning and Coordination Dept.; Tokyo Japan
Source Publication: Seminar reports for space science and technology of NASDA-Kagoshima University cooperated seminar/ 7, 9-15; NASDA-CON-000002/ (SEE 20020023817)
Subj. Category Text: Life Sciences (General)

Result Set Record: 8
Title Information: Iterative Repair Planning for Spacecraft Operations Using the Aspen System
Author and Affiliation: Rabideau, G.; Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Knight, R.; Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Chien, S.; Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Fukunaga, A.; Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Govindjee, A.; Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Abstract: This paper describes the Automated Scheduling and Planning Environment (ASPEN). ASPEN encodes complex spacecraft knowledge of operability constraints, flight rules, spacecraft hardware, science experiments and operations procedures to allow for automated generation of low level spacecraft sequences. Using a technique called iterative repair, ASPEN classifies constraint violations (i.e., conflicts) and attempts to repair each by performing a planning or scheduling operation. It must reason about which conflict to resolve first and what repair method to try for the given conflict. ASPEN is currently being utilized in the development of automated planner/scheduler systems for several spacecraft, including the UFO-1 naval communications satellite and the Citizen

Explorer (CX1) satellite, as well as for planetary rover operations and antenna ground systems automation. This paper focuses on the algorithm and search strategies employed by ASPEN to resolve spacecraft operations constraints, as well as the data structures for representing these constraints.
Document ID (CASI): 20000052465
Publication Date: [2000]
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 4p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Format and Price Code: Hardcopy - Price Code: A01
NASA Major Term: AUTOMATIC CONTROL; MAINTENANCE; PLANETARY SURFACES; PLANNING; ROVING VEHICLES; SPACEBORNE EXPERIMENTS
NASA Minor Term: ALGORITHMS; ANTENNA DESIGN; COMMUNICATION SATELLITES; DATA STRUCTURES; EXPLORER SATELLITES; FLIGHT RULES; SEQUENCING; UNIDENTIFIED FLYING OBJECTS
Org. Source Info.: Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Subj. Category Text: Astronautics (General)

Result Set Record: 9
Title Information: Developing Communications Traffic Profiles for the Mobile User Objective Satellite System
Author and Affiliation: Collins, Daniel L.
Graziano, Thomas
Wilson, John
Abstract: The Navy Communications Satellite Program Office (PMW-146) has overall responsibility for executing the procurement of the Navy's communications satellites. The Navy plans to replace the current Ultra High Frequency Follow-On (UFO) satellite constellation with a new narrowband system called the Mobile User Objective System (MUOS) starting in 2007. In order to acquire a system that has adequate but not excessive capacity, the MUOS program requires knowledge of satellite access demand to a level of detail sufficient to determine scenario based capacity requirements. To detail these requirements, a Defense Information Systems Agency (DISA) and support contractor team developed and demonstrated a capability to generate anticipated MUOS satellite access demand for a potential user subset. This subset consisted of a Navy Carrier Battle Group (CVBG) operating in a Southwest Asia major theater war (MTW) scenario. By using the Emerging Requirements Data Base (ERDB) as a basis for developing

Information Exchange Requirements (IERs), "traffic profiles" were developed based on how Warfighters are expected to use MUOS in actual combat situations. The use of a scenario, the development IERs from the ERDB, the utilization of an automated traffic generation tool tied to a relational data base, and the employment of a domain expert panel were all essential elements of the effort. Within a ten hour period, the team was able to produce 20,472 records (transmissions) representative of a Navy CVBG employing 18 MUOS networks defined in the ERDB. Analysis of the results revealed some networks with apparent excess throughput requirements and others that may not be sufficient to meet anticipated Warfighter demands.
Document ID (CASI): 20000012930
Report Number: AD-A371151
Publication Date: Nov. 03, 1999
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 9p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Defense Information Systems Agency; Arlington, VA United States
Format and Price Code: Hardcopy - Price Code: A02
NASA Major Term: COMMUNICATION SATELLITES; SATELLITE COMMUNICATION; RELATIONAL DATA BASES
NASA Minor Term: SATELLITE CONSTELLATIONS; NARROWBAND; INFORMATION SYSTEMS; ARTIFICIAL SATELLITES
Org. Source Info.: Defense Information Systems Agency; Arlington, VA United States
Subj. Category Text: Communications and Radar

Result Set Record: 10
Title Information: A GBS/MILSTAR antenna for DOD wide body aircraft
Author and Affiliation: Oleski, Paul J.; USAF, Research Lab.; Rome, NY United States
Abstract: Satellite receiving antenna installations on airborne platforms must have a low profile to prevent drag. The antenna must have excellent wide-angle scanning performance and good gain properties over the full range of motion. The Global Broadcast Service (GBS)/Military Strategic and Tactical Relay Satellite (MILSTAR) airborne antenna is capable of satisfying these requirements and producing a wide-angle mechanically scanned beam with relatively constant antenna gain over the scanned coverage area. The subject antenna utilizes four Luneburg Lens hemispheres mounted on a reflective ground plane. The lens outputs are phased combined to provide an aperture of effectively the same gain for half the height of any mechanically steered array. The Information Connectivity Branch (IFGC) of AFRL has developed a low cost 20 GHz receive airborne antenna for reception of data from both the GBS/UHF follow-on (UFO)

satellites and the MILSTAR satellites. The mechanically scanned antenna has been mounted atop an AFRL, C-135, test aircraft and tested in flight. The antenna has a G/T of 10 dB/K, which will provide a data rate up to 23.5 Mbps. This paper describes the subject antenna and gives both ground and airborne test results.
Document ID (CASI): 20000001714
Report Number: AIAA Paper 99-4401
Publication Date: Sep. 1999
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: AIAA Space Technology Conference & Exposition, Albuquerque, NM, Sept. 28-30, 1999
NASA Major Term: DEFENSE PROGRAM; SATELLITE ANTENNAS; SPACE PLATFORMS; DIRECT BROADCAST SATELLITES; SATELLITE COMMUNICATION
NASA Minor Term: LENS DESIGN; AMPLIFICATION; CODING
Publisher Info.: United States
Subj. Category Text: Aircraft Communications and Navigation

Result Set Record: 11
Title Information: Global Broadcast Service Reach Back Via Satellite Tactical Digital Link J (S-TADIL J)
Author and Affiliation: Fenton, Sandra J.
Abstract: To meet the increasing need for additional wideband satellite capability within the Department of Defense, the Global Broadcast Service (GBS) is being developed. GBS is an asymmetric network providing up to 24 Mbps from the Satellite Broadcast Manager (SBM) to deployed forces via UHF Follow On (UFO) satellites during GBS Phase Two. The concept of Smart Push provides for most of the users' needs but cannot anticipate every need or emerging needs of the user. The user through User Pull requires the ability to request information products from the SBM through existing communication paths. This capability is termed reach back. Due to the nature of operations, not as much information is sent back from operating forces to headquarters commands; therefore, less bandwidth is required from deployed forces to headquarters commands. Reach back channels do not require as much bandwidth as GBS. This research explores the viability of using Satellite Tactical Digital Link J (S-TADIL J), also known as Satellite Link 16, as a reach back option for GBS.
Document ID (CASI): 20000031638
Report Number: AD-A372953
Publication Date: Sep. 1999
Authorized Users: Publicly available

Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 78p
Document Language: English
Document Type: Masters Thesis
Financial Spons. Info.: Naval Postgraduate School; Monterey, CA United States
Format and Price Code: Hardcopy - Price Code: A05
NASA Major Term: COMMUNICATION SATELLITES; BROADCASTING; BANDWIDTH
NASA Minor Term: ARTIFICIAL SATELLITES; ULTRAHIGH FREQUENCIES; UNIDENTIFIED FLYING OBJECTS; DEFENSE PROGRAM
Org. Source Info.: Naval Postgraduate School; Monterey, CA United States
Subj. Category Text: Communications and Radar

Result Set Record: 12
Title Information: Space Object Identification (SOI); Final Report
Abstract: The objective of this task, titles "Space Object Identification (SOI)" is to support AFRL technology development in electro-optics sensors, algorithms, and processing for SOI. The background for performing this task is as follows; The United States Space Command (USSPACECOM) has the mission to develop and maintain the Space Order of Battle (SOB)/Space Situational Awareness (SSA). This includes the knowledge of where all man-made objects in space are, what they are, what their missions and capabilities are and what their current status is.
Document ID (CASI): 19990049305
Report Number: AD-A361614
Contract Number: N00014-97-D-2014
Publication Date: Feb. 1999
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 100p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Naval Research Lab.; Washington, DC United States
Format and Price Code: Hardcopy - Price Code: A05
NASA Major Term: TECHNOLOGY ASSESSMENT; ALGORITHMS; ELECTRO-OPTICS
NASA Minor Term: SUPPORT SYSTEMS; UNIDENTIFIED FLYING OBJECTS
Org. Source Info.: Schafer Corp.; Albuquerque, NM United States

Subj. Category Text: Instrumentation and Photography

Result Set Record: 13
Title Information: Iterative repair planning for spacecraft operations using the ASPEN system
Author and Affiliation: Rabideau, Gregg; Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Knight, Russell; Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Chien, Steve; Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Fukunaga, Alex; Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Govindjee, Anita; Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Abstract: This paper describes the Automated Scheduling and Planning Environment (ASPEN). ASPEN encodes complex spacecraft knowledge of operability constraints, flight rules, spacecraft hardware, science experiments, and operations procedures to allow for automated generation of low-level spacecraft sequences. Using a technique called iterative repair, ASPEN classifies constraint violations and attempts to repair each by performing a planning or scheduling operation. It must reason about which conflict to resolve first and what repair method to try for the given conflict. ASPEN is currently being utilized in the development of automated planner/scheduler systems for several spacecraft, including the UFO-1 naval communications satellite and the Citizen Explorer (CX1) satellite, as well as for planetary rover operations and antenna ground systems automation. This paper focuses on the algorithm and search strategies employed by ASPEN to resolve spacecraft operations constraints, as well as the data structures for representing these constraints.
Document ID (CASI): 20010076623
Publication Date: 1999
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Financial Spons. Info.: Jet Propulsion Lab., California Inst. of Tech.; Pasadena, CA United States
Imprint and Other Notes: iSAIRAS'99; Proceedings of the Fifth International Symposium on Artificial Intelligence, Robotics and Automation in Space, Noordwijk, Netherlands, June 1-3, 1999 (A01-14515 02-12), Noordwijk, Netherlands, European Space Agency, 1999, p. 99-106

NASA Major Term: ITERATION; SPACECRAFT MAINTENANCE; KNOWLEDGE BASED SYSTEMS; PLANNING; SCHEDULING; AUTOMATION; ORBITAL SERVICING
NASA Minor Term: ALGORITHMS; NAVY; MILITARY SPACECRAFT; COMMUNICATION SATELLITES; ROVING VEHICLES; SPACECRAFT ANTENNAS; GROUND BASED CONTROL; CONSTRAINTS; DATA STRUCTURES
Publisher Info.: European Space Agency;Noordwijk;International Organization
Source Publication: 99-106
Subj. Category Text: Space Communications, Spacecraft Communications, Command and Tracking

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Result Set Record: 14
Title Information: Follow-On Operational Test and Evaluation (FOT&E) (OT-IVB) of the Block II Ultra High Frequency Follow-On (UFO) Satellite System
Author and Affiliation: Caudle,
Abstract: No abstract
Document ID (CASI): 19990008806
Report Number: AD-B238959
Publication Date: Sep. 22, 1998
Authorized Users: U.S. Government agencies only
Security Classif.: Unclassified
Restriction on Access: Limited Distribution
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jul 15, 2003
Description: 4p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Operational Test and Evaluation Force; Norfolk, VA United States
Format and Price Code: Hardcopy - Price Code: A01
NASA Major Term: PERFORMANCE TESTS; EVALUATION; MILITARY OPERATIONS; COMMUNICATION SATELLITES; ULTRAHIGH FREQUENCIES
NASA Minor Term: EFFECTIVENESS; ARTIFICIAL SATELLITES; UNIDENTIFIED FLYING OBJECTS; HIGH FREQUENCIES; DEFENSE PROGRAM
Non-NASA Terms: JOINT MILITARY ACTIVITIES; MILITARY PLANNING; COMMUNICATION SATELLITE TERMINALS; ULTRAHIGH FREQUENCY
Org. Source Info.: Operational Test and Evaluation Force; Norfolk, VA United States
Subj. Category Text: Spacecraft Design, Testing and Performance

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Result Set Record: 15
Title Information: Ufo: A personal global file system based on user-level extensions to the operating system

Author and Affiliation: Alexandrov, Albert D.; Univ. of California at Santa Barbara; Santa Barbara, CA United States
Ibel, Maximilian
Schauser, Klaus E.
Scheiman, Chris J.
Abstract: In this article we show how to extend a wide range of functionality of standard operating systems completely at the user level. Our approach works by intercepting selected system calls at the user level, using tracing facilities such as the/proc file system provided by many Unix operating systems. The behavior of some intercepted system calls is then modified to implement new functionality. This approach does not require any relinking or recompilation of existing applications. In fact, the extensions can even be dynamically 'installed' into already running processes. The extensions work completely at the user level and install without system administrator assistance. Individual users can choose what extensions to run, in effect creating a personalized operating system view for themselves. We used this approach to implement a global file system, called Ufo, which allows users to treat remote files exactly as if they were local. Currently, Ufo supports file access through the FTP and HTTP protocols and allows new protocols to be plugged in. While several other projects have implemented global file system abstractions, they all require either changes to the operating system or modifications to standard libraries. The article gives a detailed performance analysis of our approach to extending the OS and establishes that Ufo introduces acceptable overhead for common applications even though intercepting individual system calls incurs a high cost.
Document ID (CASI): 19990098072
Publication Date: Aug, 1998
Authorized Users: U.S. Government agencies and U.S. Government agency contractors only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 27p
Document Language: English
Document Type: Journal Article
NASA Major Term: OPERATING SYSTEMS (COMPUTERS); FILE MAINTENANCE (COMPUTERS); PROTOCOL (COMPUTERS)
Non-NASA Terms: Computer operating systems; User-level operating systems
Publisher Info.: ACM;New York, NY;United States
Source Publication: ACM Transactions on Computer Systems (ISSN 0734-2071) / Volume 16; no. 3; p. 207-233
Subj. Category Text: Computer Operations and Hardware

Result Set Record: 16
Title Information: The next generation mobile user objective system (MUOS)

Author and Affiliation: Loiselle, James; U.S. Navy, Communications Satellite Program Office; San Diego, CA United States
Tarleton, Robert; U.S. Navy, Communications Satellite Program Office; San Diego, CA United States
Ingerski, Jerry; U.S. Navy, Communications Satellite Program Office; San Diego, CA United States
Abstract: The Navy's Ultra High Frequency (UHF) Follow-On (UFO) constellation provides narrowband tactical satellite communications to the DoD warfighter. The UFO constellation, initially launched in 1993, will begin to reach the end of its design life early in the next century. The Navy has developed an acquisition strategy to replace the UFO constellation and briefed it to the MILSATCOM Senior Warfighters Forum (SWarF) and the MILSATCOM Senior Steering Group. The Joint Requirements Oversight Council (JROC) will be briefed in the near future. That strategy consists of three components: (1) procure a UHF gapfiller satellite (UFO F11) for launch in 2003, (2) use commercial satellite assets as much as practical, and (3) procure the Mobile User Objective System (MUOS) with an initial operational capability in 2007. This paper presents the Navy's plans for continuing to provide communications to the mobile warfighter and provides the details, as currently planned, for the MUOS acquisition.
Document ID (CASI): 19990001779
Report Number: AIAA Paper 98-5246
Publication Date: 1998
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: AIAA Defense and Civil Space Programs Conference and Exhibit, Huntsville, AL, Oct. 28-30, 1998, Collection of Technical Papers; Reston, VA, American Institute of Aeronautics and Astronautics, 1998, p. 321-325
NASA Major Term: ULTRAHIGH FREQUENCIES; SATELLITE CONSTELLATIONS; SATELLITE COMMUNICATION; NAVY; FIGHTER AIRCRAFT
NASA Minor Term: NARROWBAND; UPLINKING; DOWNLINKING
Publisher Info.: American Institute of Aeronautics and Astronautics;Reston, VA;United States
Source Publication: 321-325
Subj. Category Text: Communications and Radar

Result Set Record: 17
Title Information: Spectrally efficient high data rate waveforms for the UFO SATCOM channel; UHF Follow-On

Author and Affiliation: Battista, Richard M.; Linkabit Wireless; San Diego, CA United States
Jacobson, Ronald R.; Linkabit Wireless; San Diego, CA United States
Middlestead, Richard W.; Linkabit Wireless; San Diego, CA United States
Abstract: This paper compares two spectrally efficient constant amplitude modulated waveforms for use on the 5 and 25 KHz UHF Follow-On (UFO) SATCOM channels. The waveforms are: 2-h, 4-ary continuous phase modulation (CPM) and phase-shaped 8PSK trellis coded modulation (8PSK-TCM). The satellite channel is characterized by a multipole linear filter followed by a hardlimiter, zonal filter, and traveling wave tube (TWT) amplifier. For the additive white Gaussian noise (AWGN) channel the TCM waveform provides about 2.9 dB of coding gain at P(be) = 10 exp -5 without bandwidth expansion, however, a high-rate Reed-Solomon (RS) outer code is used to obtain an additional 1.1 dB resulting in a bandwidth expansion of less than 7 percent. The CPM waveform uses modulation indices which are dependent on the data rate and thus, in the AWGN channel, provides variable coding gains ranging from 2.2 dB at 48 Kbps to about 4.2 dB at 19.2 Kbps. The performance is examined for symbol rates as high as the channel bandwidth. In addition to providing variable coding gain, the CPM waveform results in a wider spectrum at the lower data rates, BcT much greater than 1, thus efficiently occupying the channel bandwidth. The increased coding gain benefits disadvantaged terminals, i.e., those with lower C/N(0) capability. For the TCM waveform this is accomplished by decreasing the rate of the outer code for lower user data rates thus filling the channel bandwidth while achieving additional coding gain.
Document ID (CASI): 19990001741
Report Number: AIAA Paper 98-5109
Publication Date: 1998
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: AIAA Defense and Civil Space Programs Conference and Exhibit, Huntsville, AL, Oct. 28-30, 1998, Collection of Technical Papers; Reston, VA, American Institute of Aeronautics and Astronautics, 1998, p. 15-22
NASA Major Term: WAVEFORMS; SATELLITE COMMUNICATION; ULTRAHIGH FREQUENCIES; RANDOM NOISE
NASA Minor Term: PHASE MODULATION; PHASE SHIFT KEYING; REED-SOLOMON CODES
Publisher Info.: American Institute of Aeronautics and Astronautics;Reston, VA;United States
Source Publication: 15-22
Subj. Category Text: Communications and Radar

Result Set Record: 18
Title Information: Design of an Attitude Dynamics and Control Subsystem for a Medium Earth Orbit Satellite
Author and Affiliation: Bush, Danny K.; Naval Postgraduate School; Monterey, CA United States
Abstract: The Department of Defense has a continuing need for satellite communications to satisfy the demand for information exchange for strategic, operational, and tactical warfighters. There is currently a Deputy Undersecretary of Defense for Space (DUSD (Space)) transition planning effort to develop a satellite communications architecture for the 2007-2010 time frame. During this time all three current satellite systems; UFO, DSCS, and MILSTAR, are expected to degrade rapidly. As part of the DUSD - Space effort the U.S. Navy was tasked to form a Mobile Users Study to establish a framework for completing the detailed requirements and engineering work needed to develop the UHF/Mobile User transition plan. Then, as part of the Navy effort the Naval Postgraduate School's Astronautical Engineering class SE-6l under Professor Brij Agrawal's guidance designed a proposed medium Earth orbit communications satellite. This thesis is a design of the Attitude Dynamics and Control Subsystem for the subject medium Earth orbit MUS communications satellite. The thesis describes and explores the five major steps in designing an Attitude, Dynamics and Control Subsystem and focuses on key ADCS related areas that are peculiar to a MEO satellite as compared to a (GEO satellite.
Document ID (CASI): 19980203126
Report Number: AD-A340981
Publication Date: Dec. 1997
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 197p
Document Language: English
Document Type: Masters Thesis
Financial Spons. Info.: Naval Postgraduate School; Monterey, CA United States
Format and Price Code: Hardcopy - Price Code: A09
NASA Major Term: ARTIFICIAL SATELLITES; COMMUNICATION SATELLITES; DESIGN ANALYSIS; ATTITUDE (INCLINATION); CONTROL SYSTEMS DESIGN
NASA Minor Term: EARTH ORBITS; UNIDENTIFIED FLYING OBJECTS; ULTRAHIGH FREQUENCIES; SATELLITE COMMUNICATION; DYNAMIC CONTROL
Non-NASA Terms: ARTIFICIAL SATELLITES; SATELLITE COMMUNICATIONS; COMMUNICATION SATELLITES
Org. Source Info.: Naval Postgraduate School; Monterey, CA United States
Subj. Category Text: Spacecraft Design, Testing and Performance

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Result Set Record: 19

Title Information: Universal Fiber Optic Test/Instrumentation System (UFO-TIS); Final Report
Author and Affiliation: Penrose, Newton B.; Systems and Processes Engineering Corp.; Austin, TX United States
Fredin, Leif; Systems and Processes Engineering Corp.; Austin, TX United States
Hallidy, William; Systems and Processes Engineering Corp.; Austin, TX United States
Krenek, Brendan; Systems and Processes Engineering Corp.; Austin, TX United States
Abstract: No Abstract.
Accession Number: 96X36851
Document ID (CASI): 19970030271
Report Number: NASA-CR-205580; NAS 1.26:205580; NONP-NASA-DK-1997056842
Contract Number: NAS4-97022
Project/Task No.: SBIR-01-15-1100
Publication Date: Aug. 29, 1997
Authorized Users: NASA personnel only
Security Classif.: Unclassified
Restriction on Access: Limited by Small Business Innovation Research (SBIR)
Available From: Contact the Dryden SBIR Field Center Manager for further information
Copyright Indicator: No Copyright
Database Load Date: Jul 15, 2003
Description: 44p ; Diskette: 1 3.5-inch DSHD diskette
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: NASA Dryden Flight Research Center; Edwards, CA United States
NASA Major Term: FIBER OPTICS; REFLECTOMETERS; TEMPERATURE SENSORS; STRAIN GAGES; OPTICAL FIBERS; OPTICAL MEASUREMENT
NASA Minor Term: RAYLEIGH SCATTERING; STRAIN MEASUREMENT; LASER APPLICATIONS; ELECTRONIC EQUIPMENT; SIGNAL PROCESSING; MODULATION; CHIRP; CONTINUOUS RADIATION; RAMAN SPECTRA
Org. Source Info.: Systems and Processes Engineering Corp.; Austin, TX United States
Subj. Category Text: Optics

Result Set Record: 20
Title Information: SETI and education
Author and Affiliation: Bhathal, Ragbir; Western Sydney, Univ.; Campbelltown Australia
Abstract: This paper discusses SETI programs in the formal education systems of Australia. It is argued that young people need to become informed about the difference beween ETI and UFOs. Suggestions are made for secondary school and university-level courses on SETI education.
Document ID (CASI): 19980110693
Report Number: IAA Paper 97-9201
Publication Date: Oct. 1997

Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: IAF, International Astronautical Congress, 48th, Turin, Italy, Oct. 6-10, 1997
NASA Major Term: PROJECT SETI; EDUCATION; UNIVERSITY PROGRAM
NASA Minor Term: EXTRATERRESTRIAL INTELLIGENCE; PHILOSOPHY
Publisher Info.: United States
Subj. Category Text: Social Sciences (General)

Result Set Record: 21
Title Information: UFOs in Brazil and South Africa
Author and Affiliation: Lazarev, A. I.; S. I. Vavilov State Optical Inst. All-Russia Scientific Cent.; St. Petersburg Russia
Abstract: Certain atmospheric optical phenomena manifest themselves especially distinctly at twilight near the visible horizon of the earth. This is associated with the increase of optically active air mass, as well as the sharp reduction of the brightness of the atmosphere, which enhances the contrast of observable phenomena on the background of the twilight sky.
Document ID (CASI): 19980039855
Publication Date: September, 1997
Authorized Users: U.S. Government agencies and U.S. Government agency contractors only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Journal Article
NASA Major Term: AIR MASSES; REPUBLIC OF SOUTH AFRICA; UNIDENTIFIED FLYING OBJECTS; ATMOSPHERIC OPTICS; VISIBILITY; EARTH ATMOSPHERE; SCATTERING; SOLAR RADIATION
NASA Minor Term: CHARGED PARTICLES; ELECTRONS; PROTONS
Non-NASA Terms: Atmospheric optics; Atmospheric optical phenomena; Air mass; Flying saucers
Publisher Info.: Opt Soc. America;Washington, DC;United States
Source Publication: Journal of Optical Technology (A Translation of Opticheskii Zhurnal) (ISSN 1070-9762) / Volume 64; no. 9; p. 869
Subj. Category Text: Energy Production and Conversion

Result Set Record: 22
Title Information: Some observations on avoiding pitfalls in developing future flight systems
Author and Affiliation: Bennett, Gary L.; United States
Abstract: A number of programs and concepts have been proposed to achieve breakthrough propulsion. As a cautionary aid to researchers in breakthrough propulsion or other fields of advanced endeavor, case histories of potential pitfalls in scientific research are described. From these case histories some general characteristics of erroneous science are presented. Guidelines for assessing exotic propulsion systems are suggested. The scientific method is discussed, and some tools for skeptical thinking are presented. Lessons learned from a recent case of erroneous science are listed.
Document ID (CASI): 19980101070
Report Number: AIAA Paper 97-3209
Publication Date: Jul. 1997
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, 33rd, Seattle, WA, July 6-9, 1997
NASA Major Term: SPACECRAFT PROPULSION; TECHNOLOGICAL FORECASTING; PROPULSION SYSTEM PERFORMANCE; NASA SPACE PROGRAMS; ERROR ANALYSIS
NASA Minor Term: FLIGHT VEHICLES; UNIDENTIFIED FLYING OBJECTS; RESEARCH AND DEVELOPMENT
Publisher Info.: United States
Subj. Category Text: Spacecraft Propulsion and Power

Result Set Record: 23
Title Information: UFO/FLTSAT SATCOM link margin; UHF Follow-On/Fleet Satellite
Author and Affiliation: Franke, Ernie; Raytheon E-Systems; Saint Petersburg, FL United States
Stephens, Don; Raytheon E-Systems; Saint Petersburg, FL United States
Abstract: Relative comparison of the Effective Isotropic Radiated Power (EIRP) from UHF Follow-On (UFO) with Fleet Satellite (FLTSAT) satellites shows equal or reduced downlink signal power, far less than the user-anticipated 3.5 dB increase in specified narrowband channel EIRP. Understanding of this measurement is key to expected UHF SATCOM performance as the UFO constellation replaces aging FLTSAT satellites. Narrowband (5 kHz) and wideband (25 kHz) channel spacing has improved with the

advent of UFO to allow an increase in transponder channel bandwidth, inviting the use of higher data rate modulation. Mobile SATCOM users, however, will not be able to take advantage of this increased data throughput, due to low downlink margins. Technological advances are required to mitigate low available C/N ratios. If downlink margin becomes too low during multipath fading, the terminal becomes synchronization-limited. Several techniques are available which provide improvement over the traditional Costas tracking and synchronization loops. The MOST (Multiple Output SATCOM Transceiver) terminal utilizes advanced software algorithms to provide a 5 dB improvement in acquisition and tracking, compared to traditional terminals.
Document ID (CASI): 19980105807
Report Number: AIAA Paper 97-3921
Publication Date: 1997
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: AIAA Defense and Space Programs Conference and Exhibit - Critical Defense and Space Programs for the Future, Huntsville, AL, Sept. 23-25, 1997, A Bound Collection of Papers; Reston, VA, American Institute of Aeronautics and Astronauti
NASA Major Term: SATELLITE CONSTELLATIONS; DATA LINKS; SATELLITE COMMUNICATION; NARROWBAND; CARRIER TO NOISE RATIOS
NASA Minor Term: SYNCHRONOUS SATELLITES; ULTRAHIGH FREQUENCIES; TECHNOLOGY UTILIZATION; EARTH ORBITS
Non-NASA Terms: EFFECTIVE ISOTROPIC RADIATED POWER (EIRP)
Publisher Info.: American Institute of Aeronautics and Astronautics;Reston, VA;United States
Source Publication: 87-95
Subj. Category Text: Space Communications, Spacecraft Communications, Command and Tracking

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Result Set Record: 24
Title Information: The Phase II Global Broadcast Service payload
Author and Affiliation: Weisinger, John W.; Hughes Space and Communications Co.; Los Angeles, CA United States
Chappell, David; U.S. Navy; Washington, DC United States
Abstract: The Phase II Global Broadcast Service (GBS) is the second phase in the development of a worldwide, high speed digital communications capability. The Phase II GBS payload will be deployed on three satellites of the Navy's UHF Follow-On (UFO) Program. This payload provides high speed digital communications at data rates up to 30 Mbps per transponder into small, mobile, affordable receiver systems; it will be used for

transmission of multimedia command, control, and intelligence information to fixed and mobile tactical forces. Each UFO GBS spacecraft will have four transponders, two receive spot beam antennas (one of which is steerable) and three independently steerable transmit spot beam antennas. The first spacecraft with the GBS Payload will launch in early 1998, less than two years from contract award, with full Phase II capability scheduled for early 1999.
Document ID (CASI): 19980140420
Report Number: AIAA Paper 96-4353
Publication Date: Sep. 1996
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: AIAA, Space Programs and Technologies Conference, Huntsville, AL, Sept. 24-26, 1996
NASA Major Term: PULSE COMMUNICATION; BROADCASTING; TRANSMISSION RATE (COMMUNICATIONS); WARFARE; DEFENSE PROGRAM; SATELLITE-BORNE INSTRUMENTS
NASA Minor Term: ULTRAHIGH FREQUENCIES; NAVY; TRANSPONDERS
Publisher Info.: United States
Subj. Category Text: Communications and Radar

Result Set Record: 25
Title Information: Optical illusions in observations of extended atmospheric trails
Author and Affiliation: Novosel'tsev, Vasilij N.; RAN, Inst. Problem Upravleniya; Moscow Russia
Abstract: The paper deals with optical illusions associated with extended trails produced in the atmosphere (and possibly in the near space) by various moving objects, such as meteorites and small cosmic particles entering the atmosphere, aircraft, rockets, and space debris. It is shown that, under certain conditions, observations of extended atmospheric trails may give rise to complex forms of optical illusions. The mechanisms of these illusions are examined, and it is suggested that such illusions may account for some encounters with UFOs reported by pilots. One of such encounters, which occurred in the Arctic in 1956, is discussed as an example.
Document ID (CASI): 19980144585
Publication Date: May 1996
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright

Database Load Date: Jun 04, 2003
Document Language: Russian
Document Type: Journal Article
Foreign Title Info.: Opticheskie illyuzii pri nablyudenii protyazhennykh atmosfernykh sledov
Imprint and Other Notes: Priroda (0032-874X), no. 5, May 1996, p. 14-25
NASA Major Term: EARTH ATMOSPHERE; TRACKS; OPTICAL ILLUSION; METEOR TRAILS
NASA Minor Term: ROCKET EXHAUST; UNIDENTIFIED FLYING OBJECTS
Publisher Info.: Russia
Source Publication: Priroda (ISSN 0032-874X) / no. 5; 14-25
Subj. Category Text: Optics

Result Set Record: 26
Title Information: 30th anniversary of the world's first 'prox ops'; orbital rendezvous and spacecraft docking Gemini p
Author and Affiliation: Oberg, Jim; United States
Abstract: The Gemini-7 mission of December, 1965 made several pathbreaking advancements in the area of manned 'proximity operations' required for orbital rendezvous and docking. Attention is drawn to the results of a new analysis of the Gemini-7 mission that offers lessons relevant to current operations. This mission was also noteworthy in having led to a misinterpretation of astronaut Borman's comment about a 'bogey' as referring to a UFO; the object sighted emerges from mission trajectory reconstruction as a visually bright booster-remnant on a similar orbit.
Document ID (CASI): 19980133980
Publication Date: 1996
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Journal Article
Imprint and Other Notes: Quest Magazine (1065-7738), vol. 5, no. 1, 1996, p. 48-51
NASA Major Term: ORBITAL RENDEZVOUS; SPACECRAFT DOCKING; GEMINI PROJECT
NASA Minor Term: TRAJECTORY ANALYSIS; SPACE DEBRIS
Publisher Info.: United States
Source Publication: Quest Magazine (ISSN 1065-7738) / Volume 5,; no. 1; 48-51
Subj. Category Text: Spacecraft Design, Testing and Performance

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Result Set Record: 27
Title Information: Verification of unfold error estimates in the UFO code

Author and Affiliation: Fehl, D. L.; Sandia National Labs.; Albuquerque, NM United States
Biggs, F.; Sandia National Labs.; Albuquerque, NM United States
Abstract: Spectral unfolding is an inverse mathematical operation which attempts to obtain spectral source information from a set of tabulated response functions and data measurements. Several unfold algorithms have appeared over the past 30 years; among them is the UFO (UnFold Operator) code. In addition to an unfolded spectrum, UFO also estimates the unfold uncertainty (error) induced by running the code in a Monte Carlo fashion with prescribed data distributions (Gaussian deviates). In the problem studied, data were simulated from an arbitrarily chosen blackbody spectrum (10 keV) and a set of overlapping response functions. The data were assumed to have an imprecision of 5% (standard deviation). 100 random data sets were generated. The built-in estimate of unfold uncertainty agreed with the Monte Carlo estimate to within the statistical resolution of this relatively small sample size (95% confidence level). A possible 10% bias between the two methods was unresolved. The Monte Carlo technique is also useful in underdetemined problems, for which the error matrix method does not apply. UFO has been applied to the diagnosis of low energy x rays emitted by Z-Pinch and ion-beam driven hohlraums.
Accession Number: 96N32839
Document ID (CASI): 19960047055
Report Number: SAND-96-0461C; CONF-960543-20; DE96-011694
Contract Number: DE-AC04-94AL-85000
Publication Date: [1996]
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 14p
Document Language: English
Document Type: Conference Paper
Financial Spons. Info.: Department of Energy; Washington, DC United States
Format and Price Code: Hardcopy - Price Code: A03
Meeting Information: Annual High-temperature Plasma Diagnostics Conference; 11th; 12-16 May 1996; Monterey, CA; United States
NASA Major Term: BIAS; ERROR ANALYSIS; ZETA PINCH; MONTE CARLO METHOD; MATRIX METHODS; SPECTRA; STANDARD DEVIATION; HOHLRAUMS
NASA Minor Term: TABLES (DATA); X RAYS; CONFIDENCE LIMITS
Org. Source Info.: Sandia National Labs.; Albuquerque, NM United States
Publisher Info.: United States
Subj. Category Text: Computer Programming and Software

Result Set Record: 28

Title Information: Follow-On Operational Test and Evaluation of the Block 2 Ultra High Frequency Follow-On (UFO) Satellite System
Abstract: No abstract
Accession Number: 96X71331
Document ID (CASI): 19960025198
Report Number: AD-B205457; OPNAV-3980
Publication Date: Nov. 01, 1995
Authorized Users: U.S. Government agencies only
Security Classif.: Unclassified
Restriction on Access: Limited Distribution
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jul 18, 2004
Description: 11p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Operational Test and Evaluation Force; Norfolk, VA United States
Format and Price Code: Hardcopy - Price Code: A03
NASA Major Term: SATELLITE COMMUNICATION; MILITARY SPACECRAFT; COMMUNICATION SATELLITES; GEOSYNCHRONOUS ORBITS; HIGH FREQUENCIES
NASA Minor Term: JAMMING; RELIABILITY; COMPATIBILITY
Org. Source Info.: Operational Test and Evaluation Force; Norfolk, VA United States
Subj. Category Text: Spacecraft Design, Testing and Performance

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Result Set Record: 29
Title Information: Follow-On Operational Test and Evaluation of the Block 2 Ultra High Frequency Follow-On (UFO) Satellite System
Accession Number: 96X71446
Document ID (CASI): 19960025914
Report Number: AD-B204863; OPTEVFOR-611/1198
Publication Date: Nov. 01, 1995
Authorized Users: U.S. Government agencies only
Security Classif.: Unclassified
Restriction on Access: Limited Distribution
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jul 18, 2004
Description: 63p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: Operational Test and Evaluation Force; Norfolk, VA United States
Format and Price Code: Hardcopy - Price Code: A04

NASA Major Term:. PERFORMANCE TESTS; TECHNOLOGY ASSESSMENT; SUPERHIGH FREQUENCIES; ULTRAHIGH FREQUENCIES; SATELLITE COMMUNICATION
NASA Minor Term: CORRECTION; SYSTEM EFFECTIVENESS; REQUIREMENTS; SCIENTIFIC SATELLITES
Org. Source Info.: Operational Test and Evaluation Force; Norfolk, VA United States
Subj. Category Text: Spacecraft Design, Testing and Performance

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Result Set Record: 30
Title Information: Workshop 9 - Untethered Flying Observer
Author and Affiliation: Sutton, David G.; Aerospace Corp.; Los Angeles, CA United States
Stroud, Robert; Aerospace Corp.; Los Angeles, CA United States
Abstract: The workshop reported on in this paper had as its main task the coordination of the definition and design of the Untethered Flying Observer (UFO). The UFO is conceived to be a free-flying vehicle hosted on a larger satellite. Its mission, activated on demand or on predetermined conditions, is to detach itself, capture detailed images of the host, and transmit these images to the ground. This mission is to last no more than 48 h. Those subsystems requiring extensive development to meet the stated mission objectives were flagged, and technology road maps were designed. In addition, the workshop identified and defined alternate missions for untethered parasitic microengineered spacecraft.
Document ID (CASI): 19980084513
Publication Date: 1995
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: International Conference on Integrated Micro/Nanotechnology for Space Applications, 1st, and Workshops, Houston, TX, Oct. 30-Nov. 3, 1995, Proceedings; Houston, TX, NASA, Johnson Space Center, 1995
NASA Major Term: FREE FLIGHT; EARTH OBSERVATIONS (FROM SPACE)
NASA Minor Term: REUSE; SPACECRAFT DESIGN; ION PROPULSION; VIBRATION MEASUREMENT; STEREOSCOPY
Publisher Info.: NASA, Johnson Space Center;Houston, TX;United States
Subj. Category Text: Astronautics (General)

Result Set Record: 31
Title Information: Workshop 2 - Software for nanosatellites

Author and Affiliation: Gorlick, Michael M.; Aerospace Corp.; Los Angeles, CA United States

Abstract: From the perspective of a computer scientist, a nanosatellite is a physically small distributed computing platform with exotic peripherals. This paper reports on a workshop which endeavored to address the issues of whether this technology represents a qualitative change that challenges computer system engineering and whether the wafer-scale integration of computation with electromechanical devices represent the next wave of qualitative change. These issues are addressed within the context of the Untethered Flying Observer (UFO), a solid silicon nanosatellite assembled from a wide variety of MEMS devices. The UFO is envisioned as mass-produced, using production techniques comparable to those for the manufacture of large-scale ICs and consumer electronics. It contains a mix of standard subsystems common to all nanosatellites and mission-specific elements. The goal here was to identify, from a software perspective, the critical issues in the design, deployment, and use of these devices and produce an outline of a research and engineering agenda that addresses these issues. The topics of discussion include rough order-of-magnitude estimates for the amount of software required for a UFO and the computational sources that it will require, the degree to which a UFO can function autonomously, software architectures suitable for a broad mix of standard subsystems plus mission-specific elements, cooperation within swarms of nanosatellites, dynamic reconfiguration to cope with changes in mission, real-time requirements for critical subsystems such as guidance or attitude control, and algorithms for the control of nanosatellites. The workshop concluded that software for the UFO is feasible; however, constructing the software in a flexible and economical manner is a significant software challenge.

Document ID (CASI): 19980084507
Publication Date: 1995
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: International Conference on Integrated Micro/Nanotechnology for Space Applications, 1st, and Workshops, Houston, TX, Oct. 30-Nov. 3, 1995, Proceedings; Houston, TX, NASA, Johnson Space Center, 1995
NASA Major Term: SOFTWARE ENGINEERING
NASA Minor Term: OBSERVABILITY (SYSTEMS); ARCHITECTURE (COMPUTERS)
Non-NASA Terms: NANOSATELLITES
Publisher Info.: NASA, Johnson Space Center;Houston, TX;United States
Subj. Category Text: Computer Programming and Software

Result Set Record: 32

Title Information: Workshop 1 - Sensors and transducers
Author and Affiliation: Amimoto, Sherwin; Aerospace Corp.; Los Angeles, CA United States
Abstract: A report is presented on a panel workshop, the scope of which covered sensors and transducers that could be used in future space applications and missions. Primary emphasis was placed on the payload or imaging system for the Untethered Flying Observer (UFO) constructed using microelectromechanical system (MEMS) technologies. The UFO mission is to observe a mothership from which the UFO is launched. The optical train, the focal planes, shutter, focus control, A/D converters, and data compression aspects are discussed within the context of the UFO mission. The technology risks were deemed low. Advanced technologies such as micro-optics and high temperature superconductors are briefly reviewed. Many sophisticated transducers and sensors are commercially available. But many do not appear to be space-qualified for radiation hardness. Several novel sensors were discussed for advanced applications.
Document ID (CASI): 19980084506
Publication Date: 1995
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: International Conference on Integrated Micro/Nanotechnology for Space Applications, 1st, and Workshops, Houston, TX, Oct. 30-Nov. 3, 1995, Proceedings; Houston, TX, NASA, Johnson Space Center, 1995
NASA Major Term: SENSORS; TRANSDUCERS; RADIATION HARDENING
NASA Minor Term: PAYLOADS; FOCUSING; PIXELS; FOCAL PLANE DEVICES; PUSHBROOM SENSOR MODES
Publisher Info.: NASA, Johnson Space Center;Houston, TX;United States
Subj. Category Text: Instrumentation and Photography

Result Set Record: 33
Title Information: Naval UHF SATCOM terminal programs - AN/WSC-3 and mini-DAMA
Author and Affiliation: Jacobson, Ronald R.; Titan Linkabit; San Diego, CA United States
Abstract: The Navy has relied heavily on UHF Satellite Communications (SATCOM) since the launch of the three Gapfiller satellites in 1976. The Navy then used a combination of FLTSAT and LEASAT, satellites which are still in use today. With the launch of the UHF Follow On (UFO) satellites (two satellites are planned for each footprint), 36 25-kHz and 42 5-kHz channels per footprint will be available. This paper provides an overview of the AN/WSC-3 UHF SATCOM/LOS Transceiver and AN/USC-42 Mini-DAMA UHF SATCOM and LOS Communications Set, which operate over

these UHF SATCOM channels. The AN/WSC-3 has been the Navy Standard UHF SATCOM and Line-of-sight transceiver for many years. The AN/USC-42(V) 1 Mini-DAMA submarine terminal and the AN/USC42(V)3 airborne terminal provide the Navy with a new generation of hardware and software, allowing 5-kHz DAMA and 25-kHz TDMA/DAMA on platforms which have space and weight restrictions. The AN/USC-42 is a complete SATCOM terminal, providing modem, transceiver, power amplifier, and baseband processing functionality.
Document ID (CASI): 19980183525
Report Number: AIAA Paper 94-4477
Publication Date: Sep. 1994
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: AIAA, Space Programs and Technologies Conference, Huntsville, AL, Sept. 27-29, 1994
NASA Major Term: SATELLITE COMMUNICATION; ULTRAHIGH FREQUENCIES; SINGLE CHANNEL PER CARRIER TRANSMISSION
NASA Minor Term: TIME DIVISION MULTIPLE ACCESS
Publisher Info.: United States
Subj. Category Text: Space Communications, Spacecraft Communications, Command and Tracking

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Result Set Record: 34
Title Information: Self-tuning of tapped stator winding induction motor servo drives using the universal field-oriented controller
Author and Affiliation: De Doncker, R. W.; GE Electronic Technologies Lab.; Schenectady, NY United States
Profumo, F.; Torino, Politecnico; Turin Italy
Pastorelli, M.; Torino, Politecnico; Turin Italy
Abstract: A universal field-oriented (UFO) controller is described which can operate both in direct and indirect field orientation modes, allowing transitions from one mode to another. Direct UFO control is realized by sensing amplitude and position of the airgap flux space vector using center taps on two machine windings. The airgap flux vector can be directly sensed without additional calculations, which depend on the machine parameters. The resulting direct universal field-oriented (DUFO) controller is not affected by steady-state detuning and can operate in flux weakening up to the theoretical speed limit of the drive. An adaptive control scheme is also proposed which provides for the continuous and automatic tuning of the controller whenever the drive operates in the direct field orientation mode.
Document ID (CASI): 19980148754

Publication Date: Jun. 1994
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Journal Article
Imprint and Other Notes: IEEE Transactions on Power Electronics (0885-8993), vol. 9, no. 4, June 1994, p. 357-366
NASA Major Term: TUNING; STATORS; SERVOMECHANISMS; CONTROLLERS; INDUCTION MOTORS
NASA Minor Term: BIPOLAR TRANSISTORS; TORQUE; SYSTEMS SIMULATION
Publisher Info.: United States
Source Publication: IEEE Transactions on Power Electronics (ISSN 0885-8993) / Volume 9,; no. 4; 357-366
Subj. Category Text: Electronics and Electrical Engineering

Result Set Record: 35
Title Information: Laboratory-produced ball lightning
Author and Affiliation: Golka, Robert K., Jr.; Golka Associates, Brockton, MA; United States
Abstract: For 25 years I have actively been searching for the true nature of ball lightning and attempting to reproduce it at will in the laboratory. As one might expect, many unidentified lights in the atmosphere have been called ball lightning, including Texas Maffa lights (automobile headlights), flying saucers (UFOs), swamp gas in Ann Arbor, Michigan, etc. For 15 years I thought ball lightning was strictly a high-voltage phenomenon. It was not until 1984 when I was short-circuiting the electrical output of a diesel electric railroad locomotive that I realized that the phenomenon was related more to a high current. Although I am hoping for some other types of ball lightning to emerge such as strictly electrostatic-electromagnetic manifestations, I have been unlucky in finding laboratory provable evidence. Cavity-formed plasmodes can be made by putting a 2-inch burning candle in a home kitchen microwave oven. The plasmodes float around for as long as the microwave energy is present.
Accession Number: 95A64174
Document ID (CASI): 19950032575
Publication Date: May 20, 1994
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003

Description: 3p
Document Language: English
Document Type: Journal Article
Financial Spons. Info.: United States
Imprint and Other Notes: Journal of Geophysical Research vol. 99, no. D5 p. 10,679-10,681 May 20, 1994
NASA Major Term: ARC DISCHARGES; ARC GENERATORS; ATMOSPHERIC ELECTRICITY; BALL LIGHTNING
NASA Minor Term: ELECTRODES; ELECTROSTATICS; HIGH VOLTAGES; LABORATORIES
Publisher Info.: United States
Source Publication: Journal of Geophysical Research (ISSN 0148-0227) / 99; D5; p. 10,679-10,681
Subj. Category Text: GEOPHYSICS

Result Set Record: 36
Title Information: Heretical science - Beyond the boundaries of pathological science
Author and Affiliation: Bennett, Gary L.; NASA; Washington, DC United States
Abstract: In 1993 the author presented a paper outlining the basic identifying characteristics of pathological science as described by Langmuir and Rousseau. This paper takes the next step following the lead of Sturrock who noted that some phenomena (such as parapsychology and unidentified flying objects) are not examples of pathological science; rather, they are examples of 'heretical science', which the author defines as the 'science' of things that aren't so as conducted by nonspecialists (those outside the scientific community).
Document ID (CASI): 19980190117
Report Number: AIAA Paper 94-4003
Publication Date: 1994
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: Intersociety Energy Conversion Engineering Conference, 29th, Monterey, CA, Aug. 7-11, 1994, Technical Papers. Pt. 3; Washington, DC, American Institute of Aeronautics and Astronautics, 1994, p. 1207-1212
NASA Major Term: EXTRASENSORY PERCEPTION; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: SCIENCE; PROVING
Publisher Info.: American Institute of Aeronautics and Astronautics;Washington, DC;United States
Source Publication: 1207-1212

Subj. Category Text: Behavioral Sciences

Result Set Record: 37
Title Information: The Ultra-High Frequency Follow-On (UFO) program
Author and Affiliation: Diederich, Franklin W.; DOD; Arlington, VA United States
Abstract: The paper describes the role of Ultra-High Frequency (UHF) communications in the general context of military satellite communications. It points out that they are used by and large to support mobile geographically dispersed users at relatively low data rates (typically 2,400 bps) in peacetime or crisis environments. It describes the channeling and networking arrangements and the types of communications transmitted in this service. It also indicates some initiatives under way which are intended to increase the capacity and usefulness of this capability by modifications to ground terminals or to the ways in which the capability is used.
Document ID (CASI): 19980024285
Report Number: AIAA Paper 93-4108
Publication Date: Sep. 1993
Authorized Users: NASA contractors and U.S. Government only
Security Classif.: Unclassified
Restriction on Access: Limited by Purchase or Exchange Agreements
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: AIAA, Space Programs and Technologies Conference and Exhibit, Huntsville, AL, Sept. 21-23, 1993
NASA Major Term: SATELLITE COMMUNICATION; MILITARY SPACECRAFT; SATELLITE NETWORKS
NASA Minor Term: ULTRAHIGH FREQUENCIES; HISTORIES
Publisher Info.: United States
Subj. Category Text: Space Communications, Spacecraft Communications, Command and Tracking

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Result Set Record: 38
Title Information: The status of cold fusion
Author and Affiliation: Storms, E.; Los Alamos National Lab.; NM, United States
Abstract: This report attempts to update the status of the phenomenon of cold fusion. The new field is continuing to grow as a variety of nuclear reactions are discovered to occur in a variety of chemical environments at modest temperatures. However, it must be cautioned that most scientists consider cold fusion as something akin to UFO's, ESP, and numerology.
Accession Number: 94N14567
Document ID (CASI): 19940010094
Report Number: DE93-012731; LA-UR-93-1564; CONF-930804-1

Contract Number: W-7405-ENG-36
Publication Date: JAN 1, 1993
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 6p
Document Language: English
Document Type: Conference Paper
Financial Spons. Info.: Department of Defense; United States
Format and Price Code: Hardcopy - Price Code: A02
Imprint and Other Notes: Presented at the 28th Intersociety Energy Conversion Engineering Conference, Atlanta, GA, 8-13 Aug. 1993
Meeting Information: Intersociety Energy Conversion Engineering Conference; 28th; 8-13 Aug. 1993; Atlanta, GA; United States
NASA Major Term: CONTROLLED FUSION; HEAT MEASUREMENT; NEUTRONS; NUCLEAR FUSION; THERMONUCLEAR REACTIONS
NASA Minor Term: DEUTERIUM; PALLADIUM; TRITIUM
Org. Source Info.: Los Alamos National Lab.; NM, United States
Publisher Info.: United States
Subj. Category Text: PLASMA PHYSICS

Result Set Record: 39
Title Information: Unidentified phenomena - Unusual plasma behavior?; effects of solar flares on atmospheric physics
Author and Affiliation: Avakian, S. V.; Gosudarstvennyi Opticheskii Institut; St. Petersburg, Russia
Kovalenok, V. V.
Abstract: The paper describes observations of a phenomenon belonging to the UFO category and the possible causes of these events. Special attention is given to an event which occurred during the night of September 19-20, 1974, when a huge 'star' was observed over Pertrozavodsk (Russia), consisting of a bright-white luminous center, emitting beams of light, and a less bright light-blue shell. The star gradually formed a cometlike object with a tail consisting of beams of light and started to descend. It is suggested that this event was related to cosmic disturbances caused by an occurrence of unusually strong solar flares. Other examples are presented that relate unusual phenomena observed in space to the occurrence of strong magnetic turbulence events.
Accession Number: 92A53873
Document ID (CASI): 19920071249
Publication Date: Jun 1, 1992
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited

Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 6p
Document Language: Russian
Document Type: Journal Article
Foreign Title Info.: Neopoznannye iavleniia - 'Prodelki' plazmy? [Russian]
Imprint and Other Notes:. Priroda (ISSN 0032-874X), no. 6, June 1992, p. 72-77. In Russian.
Miscellaneous Notes: In Russi
NASA Major Term: BALL LIGHTNING; MAGNETOHYDRODYNAMIC TURBULENCE; SOLAR ACTIVITY EFFECTS; SPACE PLASMAS; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: EARTH SCIENCES; SATELLITE OBSERVATION; ULTRAVIOLET RADIATION
Publisher Info.: Russia
Source Publication: Priroda (ISSN 0032-874X) / 6, Ju; 72-77
Subj. Category Text: GEOPHYSICS

Result Set Record: 40
Title Information: Ultra high frequency follow-on communications satellite system
Author and Affiliation: Hassien, Michael J.; U.S. Navy, Office of the Chief of Naval Operations, Washington; DC, United States
Abstract: The existing constellation of UHF communications satellites (LEASAT and FLTSAT) provide key command and control links for mobile forces of the DoD and other government agencies. The UHF Follow-On satellite program will provide for a new generation of communications satellites to replace the existing ones as they reach the end of their life cycle beginning in 1992. Continued coverage is required for both peacetime and crisis environments, and must be maintained indefinitely. An eight-satellite UFO constellation (two per coverage area) will replenish the existing FLTSATCOM constellation.
Accession Number: 92A38524
Document ID (CASI): 19920055900
Report Number: AIAA PAPER 92-1350
Publication Date: Mar 1, 1992
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 4p
Document Language: English
Document Type: Preprint

Imprint and Other Notes: AIAA, Space Programs and Technologies Conference, Huntsville, AL, Mar. 24-27, 1992. 4 p.
NASA Major Term: COMMUNICATION SATELLITES; FLEET SATELLITE COMMUNICATION SYSTEM; ULTRAHIGH FREQUENCIES
NASA Minor Term: COMMAND AND CONTROL; MILITARY TECHNOLOGY; NAVY; TELEMETRY; TRACKING (POSITION)
Publisher Info.: United States
Subj. Category Text: SPACE COMMUNICATIONS, SPACECRAFT COMMUNICATIONS, COMMAND AND TRACKING

Result Set Record: 41
Title Information: A comparison of the UHF Follow-On and MILSTAR satellite communication systems; M.S. Thesis
Author and Affiliation: Perkins, Clifton E., Jr.; Naval Postgraduate School; Monterey, CA, United States
Abstract: The author compares the UHF Follow-On and MILSTAR satellite communication systems. The comparison uses an analytical hierarchy process. Although the two systems have been tasked with different missions, a comparison of cost, capability, and orbit is conducted. UFO provides many of the same capabilities as MILSTAR, but on a smaller scale. Since UFO is also a new space system acquisition, it is used to compare dollars spent to field a viable communication system. A review of frequency bands, losses, and problems is conducted to establish the relationship. Cost data is provided to establish the major difference in the systems. While MILSTAR does possess more total capability than UFO, it is 10 times more costly. Additionally, UFO is a satellite that will evolve with new technology while MILSTAR is built to full capability immediately. In the author's opinion, the incremental performance of MILSTAR does not justify its incremental cost.
Accession Number: 92N26933
Document ID (CASI): 19920017690
Report Number: AD-A245806
Publication Date: Sep 1, 1991
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 72p
Document Language: English
Document Type: Thesis
Financial Spons. Info.: Department of Energy; United States
Format and Price Code: Hardcopy - Price Code: A04
NASA Major Term: COMMUNICATION SATELLITES; SATELLITE COMMUNICATION; SATELLITE NETWORKS; TELECOMMUNICATION; ULTRAHIGH FREQUENCIES

NASA Minor Term: COST EFFECTIVENESS; HIERARCHIES; MILITARY SPACECRAFT
Org. Source Info.: Naval Postgraduate School; Monterey, CA, United States
Publisher Info.: United States
Subj. Category Text: COMMUNICATIONS AND RADAR

Result Set Record: 42
Title Information: Hypothesis on the nature of atmospheric UFOs
Author and Affiliation: Mukharev, L. A.
Abstract: A hypothesis is developed according to which the atmospheric UFO phenomenon has an electromagnetic nature. It is suggested that an atmospheric UFO is an agglomeration of charged atmospheric dust within which there exists a slowly damped electromagnetic field. This field is considered to be the source of the observed optical effects and the motive force of the UFO.
Accession Number: 92A10912
Document ID (CASI): 19920028288
Publication Date: Aug 1, 1991
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 7p
Document Language: Russian
Document Type: Journal Article
Foreign Title Info.: Gipoteza o prirode atmosfernykh NLO [Russian]
Imprint and Other Notes: Radiotekhnika i Elektronika (ISSN 0033-8494), vol. 36, Aug. 1991, p. 1437-1443. In Russian.
Miscellaneous Notes: In Russian
NASA Major Term: ATMOSPHERIC EFFECTS; ATMOSPHERIC ELECTRICITY; ATMOSPHERIC OPTICS; ELECTROMAGNETIC PROPERTIES; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: AEROSOLS; CHARGED PARTICLES; EQUATIONS OF MOTION
Publisher Info.: Ussr
Source Publication: Radiotekhnika i Elektronika (ISSN 0033-8494) / 36; 1437-144
Subj. Category Text: GEOPHYSICS

Result Set Record: 43
Title Information: A general approach to interstellar flight
Author and Affiliation: Paterson, Erik T.; British Columbia, University; Vancouver; Erik Paterson Medical Services, Inc., Creston, Canada

Abstract: This paper explores a scenario involving an approach based upon the presupposition that no planetary civilization can mount an interstellar venture. The space community is familiar with the features of the space colonies/settlements proposed by O'Neill and his associates. A low enough acceleration applied to any such colony for long enough can allow it to be moved from any point in the solar system to any other, provided enough raw materials are carried for the duration of the flight, and the initial population is low enough to prevent unacceptable population density by the time of the arrival at the destination. During such a flight the great majority of the people aboard would not experience much difference from their lives before the start of the flight. Having a gained experience with such flights within the solar system, a civilization consisting of such mobile colonies will find little difference for flights beyond the solar system, merely requiring a greater initial reserve of raw materials and a relatively lower initial population. This has implications for the Fermi Paradox and the UFO problem.
Accession Number: 92A17782
Document ID (CASI): 19920035158
Publication Date: JAN 1, 1991
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 7p
Document Language: English
Document Type: Conference Paper
Imprint and Other Notes: IN: Space manufacturing 8 - Energy and materials from space; Proceedings of the 10th Princeton/AIAA/SSI Conference, Princeton, NJ, May 15-18, 1991 (A92-17751 05-12). Washington, DC, American Institute of Aeronautics and Astronautics, 1991, p. 267-273.
Meeting Information: Princeton/AIAA/SSI Conference; 10th; May 15-18, 1991; Princeton, NJ; United States
NASA Major Term: EXTRATERRESTRIAL INTELLIGENCE; INTERSTELLAR TRAVEL; SPACE COLONIES
NASA Minor Term: INTERSTELLAR SPACECRAFT; LONG DURATION SPACE FLIGHT; MANNED SPACE FLIGHT; UNIDENTIFIED FLYING OBJECTS
Publisher Info.: United States
Source Publication: (SEE A92-17751, A92-17751)
Subj. Category Text: ASTRONAUTICS (GENERAL)

Result Set Record: 44
Title Information: The cosmic water hole; Book on radio astronomical search for extraterrestrial life
Author and Affiliation: Davoust, Emmanuel; Observatoire Midi-Pyrenees, Toulouse, France
Accession Number: 91A31098

Document ID (CASI): 19910046475
Publication Date: JAN 1, 1991
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 220p
Document Language: English
Document Type: Book/Monograph
Imprint and Other Notes: (Silence au point d'eau, Toulouse, France, TEKNEA, 1988) Cambridge, MA, MIT Press, 1991, 220 p. Translation. Previously cited in issue 10, p. 1548, Accession no. A89-27056.
NASA Major Term: EXTRATERRESTRIAL LIFE; PROJECT SETI; RADIO ASTRONOMY; RADIO SIGNALS
NASA Minor Term: BIOLOGICAL EVOLUTION; COMETS; EXTINCTION; EXTRATERRESTRIAL COMMUNICATION; MILKY WAY GALAXY; PALEOBIOLOGY; PANSPERMIA; PLANETARY SYSTEMS; SPACE COLONIES; SPACE EXPLORATION; UNIDENTIFIED FLYING OBJECTS
Publisher Info.: United States
Subj. Category Text: SPACE SCIENCES (GENERAL)

Result Set Record: 45
Title Information: Methodological aspects of the problem of the intermediary language for the contact of intelligent systems
Author and Affiliation: Zaretskaia-Chukreeva, O. A.; AN USSR, Institut Kibernetiki, Kiev; Ukrainian SSR, United States
Abstract: Methodological aspects of the problem of the intermediary languages (ILs) for contact with hypothetical extraterrestrial civilizations is addressed. The concepts of supersystem, demand, and determinants developed by Mel'nikov (1978). A typology of intelligent systems is outlined with indications of appropriate ILs for the various types.
Accession Number: 91A14087
Document ID (CASI): 19910029464
Report Number: IAF PAPER 90-595
Publication Date: Oct 1, 1990
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: Other Sources
Copyright Indicator: Copyright
Database Load Date: Jun 04, 2003
Description: 6p
Document Language: English
Document Type: Preprint

Imprint and Other Notes: IAF, International Astronautical Congress, 41st, Dresden, Federal Republic of Germany, Oct. 6-12, 1990. 6 p.
NASA Major Term: EXTRATERRESTRIAL INTELLIGENCE; LANGUAGES; METHODOLOGY; PROJECT SETI; SPACE COMMUNICATION
NASA Minor Term: INTERSTELLAR COMMUNICATION; INTERSTELLAR TRAVEL; UNIDENTIFIED FLYING OBJECTS
Publisher Info.: International Organization
Subj. Category Text: SPACE SCIENCES (GENERAL)

Result Set Record: 46
Title Information: JAL (Japan Air Lines) Flight 1628 unidentified traffic sighting, November 17, 1986; Final Report
Abstract: On November 17, 1986, Japan Airlines Flight 1628, an all cargo Boeing 747, was enroute from Keflavik, Iceland, to Anchorage, Alaska. At 0219 UTC (November 18, 1986) the captain of Flight 1628 reported traffic at his altitude 1 mile in front of his aircraft. The unidentified traffic was later reported visible on JAL 1628's weather radar and intermittently by Anchorage Center and the Military Regional Operations Center. JAL 1628 reported that the traffic stayed in his vicinity during a descent and turns, including a 360 degree turn. At 0253 UTC, JAL 1628 reported that the unidentified traffic was no longer in sight. The report includes the inspection/investigator (Flight Standards) package, the Air Traffic package, radar data, and news release statements.
Accession Number: 87N27648
Document ID (CASI): 19870018215
Report Number: PB87-184206; DOT/FAA/AL-87/1
Publication Date: Mar 5, 1987
Authorized Users: Publicly available
Security Classif.: Unclassified
Restriction on Access: Unlimited
Available From: CASI
Copyright Indicator: No Copyright
Database Load Date: Jun 04, 2003
Description: 377p
Document Language: English
Document Type: Technical Report
Financial Spons. Info.: United States
Format and Price Code: Hardcopy - Price Code: A17
NASA Major Term: AIR TRAFFIC; AIRCRAFT DETECTION; INVESTIGATION; UNIDENTIFIED FLYING OBJECTS
NASA Minor Term: ALASKA; ICELAND; JAPAN
Org. Source Info.: Federal Aviation Administration; Anchorage, AK, United States
Publisher Info.: United States
Subj. Category Text: AIR TRANSPORTATION AND SAFETY

Result Set Record: 47

1)

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20500

September 14, 1977

Dear Bob:

I have your letter of September 6 responding to my letter of July 21 recommending that NASA become a focal point for Federal activity in UFO matters.

I am pleased that you agree that NASA can handle the public inquiries on UFOs. The fact that my Office and the White House can direct such inquiries to NASA will relieve my small staff of a responsibility we are not equipped to handle. Therefore, I have asked my assistant, Stan Schneider, who has discussed this matter with your Executive Officer, Ed Andrews, to forward all our UFO inquiries to NASA.

Regarding the recommendation for NASA to become a focal point for the scientific and technical appraisal of the UFO phenomenon, I can understand your reluctance to commit the agency to a formal program before evaluating the current status and recent history of UFO activity and determining what might be involved in conducting a serious study on this matter. Therefore, I concur with your idea of assigning a project officer at NASA to review the situation before deciding whether to undertake a more formal inquiry.

By copy of this letter, I am informing Jim Purks of the White House Media Liaison Office of our exchange of ideas on this subject so that they are in the communications loop on this situation. I will suggest that he forward all public inquiries on UFOs to the White House to NASA (Code 4) for response.

I would appreciate it if NASA could keep my office, through Stan Schneider, informed of any progress the agency makes toward a decision on a possible UFO study.

Yours sincerely,

Frank Press
Director

Honorable Robert A. Frosch
Administrator
National Aeronautics and
Space Administration
Washington, D.C. 20546

cc: Jim Purks, W.H. Media Liaison

ction Copy to F
nfo Copy to A, AA, ADA, AG, L, S, W, C, AE/Andrews
A94611
Rec'd in NASA 9-19-77
Response Date NONE
Response Ready for ____
Signature of filed with 9-6-77 corro

AA/Judy

SEP 6 1977

Honorable Frank Press
Director
Office of Science and Technology Policy
Executive Office of the President
Washington, DC 20500

Dear Frank:

In your letter of July 21 you expressed the view that NASA should be the focal point for UFO matters, and specifically recommended that a panel of inquiry be formed by NASA to see if there are any significant new findings since the Condon report and that NASA become the focal point for general correspondence and inquiries.

While we are inclined to agree with your recommendation, there are a number of questions which need to be resolved before any formal program is undertaken. You may know that the Air Force served as the focal point for UFO matters during the 1960's and devoted considerable resources to the program. It, however, concluded, in the absence of significant findings, that the program warranted no more than routine form letter answers to inquiries and has been handling the program in that manner since about 1970. It now handles a small number of inquiries, perhaps 10 to 12 monthly. NASA, likewise, handles routine inquiries by form letter response, 10 to 12 formal inquiries and a somewhat larger number of public inquiries monthly. NASA uses the information sheet attached in its responses. The Air Force uses similar data.

From the point of view of the Administration as a whole, this is economical. However, it fails to provide a recognized focal point for technical appraisal of sightings and understandably results in some frustration to individuals making what they consider to be serious inquiries.

A panel of inquiry such as you suggest might possibly discover new significant findings. It would certainly generate current

interest and could lead to the designation of NASA as the focal point for UFO matters. It would require some additional resources for the inquiry and for follow-on activity. Before committing to this, I feel that we should assure ourselves that an inquiry is justified. I believe we could do this by naming a NASA project officer to review reports of the last ten years and to provide a specific recommendation relative to any further inquiry by the end of this year. If you concur, I will initiate this action.

Very truly yours,

Original Signed By
Robert A. Frosch

Robert A. Frosch
Administrator

Enclosure

cc: AA ✓ A ✓
AC ✓
ADA ✓
S ✓
F ✓
L ✓ 19
W ✓
C ✓
AE ✓

F/RA Newman:elt:8/18/77 A-34611
Rewritten:ADA/L:Rowe/Crow:8/25/77
Rewritten:ADA/Crow:aom:9/1/77

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20500

July 21, 1977

Dear Bob:

We have discovered that the White House is becoming the focal point for an increasing number of inquiries concerning UFO's. As you know, there appears to be a national revival of interest in the matter with a younger generation becoming involved. Those of us in the Executive Office are ill-equipped to handle these kinds of inquiries.

It seems to me that the focal point for the UFO question ought to be in NASA. I recommend two things: since it has been nearly a decade since the Condan report, I believe that a small panel of inquiry could be formed to see if there are any new significant findings. Since this is a public relations problem as much as anything else, people who are known to be interested in the problem and also highly known, such as Carl Sagan, ought to be involved. This is a panel of inquiry that could be formed by NASA.

The second thing I would like to suggest is that NASA become the focal point for general correspondence and that those inquiries which come to the White House be sent to the designated desk at NASA.

Yours sincerely,

Frank

Frank Press
Director

Robert Frosch
Administrator
National Aeronautics and
Space Administration
Washington, D.C. 20546

Action Copy to F
Info Copy to A, ADA, AA, AX, L
A34611
Rec'd in NASA 7-25-77
Suspense Date 8-8-77
Prepare Reply for Signature of A

2)

NOV 3 1977

Honorable Mark O. Hatfield
United States Senate
Washington, DC 20510

Dear Senator Hatfield:

In response to your recent telephonic inquiry, NASA's involvement with Unidentified Flying Objects (UFOs) came about through the suggestion of Dr. Frank Press, Science Advisor to the President.

NASA has agreed to be the contact point for the White House with members of the general public who make inquiries concerning UFOs. NASA's role is simply to answer correspondence concerning UFOs directed to the White House.

Regarding the investigation of UFO sightings, NASA at this time is conducting a study of the literature for approximately the last ten years to determine whether it might be worthwhile to conduct any further investigation of UFOs at this time. A project officer has been assigned to the task of reviewing UFO literature and he is presently organizing this task. No field investigation is being conducted at this time and no funds have been allocated for that purpose.

If I can be of any further assistance, please let me know.

Sincerely,

Original signed by
Herbert J. Rowe

Herbert J. Rowe
Associate Administrator
for External Affairs

CONCURRENCE: 11/3/77
Code C

bcc: SA/Henry, C, L Chron, L Subj

L/HJRowe/avb 11-3-77

NOTE: Telephone call rec'd 11/1/77 at 4:05p.m. from Gregory Doblestein in Hatfield's ofc. tele 224-8320

4)

to none in the world, it behooves NASA to come up with a plan, an organization, and a budget to forward to Dr. Frank Press that will propel NASA into the forefront of expanding "human knowledge of phenomena in the atmosphere and space," -- a quotation from the National Aeronautics and Space Act of 1958.

DS

18 DEC 1977

MEMORANDUM

W. Beyea

TO: A/Administrator

Enclosures - 3

FROM: DS/Chief, Ground Operations Safety

SUBJECT: UFO's

REF: NMI 3711.7A

I am taking advantage of the prerogative offered in the reference to address this communication directly to the Administrator.

Enclosure (1) is President Jimmy Carter's 1973 UFO report. Obviously, he is one of the more than 15 million Americans Dr. George Gallup states have seen UFO's. Dr. Gallup's polls also show that 51% of Americans believe in them -- some 110,000,000 taxpayers -- a tremendously broad base of support.

Mr. Dave Williamson of NASA has been quoted in the news media as stating "NASA officials aren't eager to do it [an investigation of UFO's] without some solid evidence such as a 'little green man,' or at least a piece of metal from a UFO." It appears that Dave wants proof of UFO's before he permits an investigation to see whether or not they exist. Enclosure (2), "Celestial Passengers -- UFO's & Space Travel" on pages 26 through 32, inclusive, detail what could be a piece of a UFO that has been thoroughly examined for over two months by the Los Alamos Scientific Laboratory.

Enclosure (3) is a writeup -- primarily of the multifarious sightings of UFO's made by NASA astronauts and NASA radar tracking stations. This competent evidence could be the starting point for NASA UFO investigations.

With the backing of the White House, the support of so many Americans, and scientific and engineering expertise second

to none in the world, it behooves NASA to come up with a plan, an organization, and a budget to forward to Dr. Frank Press that will propel NASA into the forefront of expanding "human knowledge of phenomena in the atmosphere and space," -- a quotation from the National Aeronautics and Space Act of 1958.

MEMORANDUM

TO: W. Boyes
A/Administrator

Enclosures - 3

FROM: DS/Chief, Ground Operations Safety

SUBJECT: UFO's

REF: NASA 1971.71

I am taking advantage of the prerogative offered in the reference to address this communication directly to the Administrator.

DS:W.Boyes:evf:53144:12/12/77

Enclosure (1) is President Jimmy Carter's 1973 UFO report. Obviously, he is one of the more than 15 million Americans Dr. George Gallup states have seen UFO's. Dr. Gallup's polls also show that 51% of Americans believe in them -- some 110,000,000 taxpayers -- a tremendously broad base of support.

Mr. Dave Williamson of NASA has been quoted in the news media as stating "NASA officials aren't eager to do it [an investigation of UFO's] without some solid evidence such as a 'little green man,' or at least a piece of metal from a UFO." It appears that Dave wants proof of UFO's before he permits an investigation to see whether or not they exist. Enclosure (2), "Celestial Passengers -- UFO's & Space Travel" on pages 26 through 31, inclusive, detail what could be a piece of a UFO that has been thoroughly examined for over two months by the Los Alamos Scientific Laboratory.

Enclosure (3) is a writeup -- primarily of the multifarious sightings of UFO's made by NASA astronauts and NASA radar tracking stations. This competent evidence could be the starting point for NASA UFO investigations.

With the backing of the White House, the support of so many Americans, and scientific and engineering expertise secure

10-2-4(197

5)

December 21, 1977

Honorable Frank Press
Director
Office of Science and Technology
Policy
Executive Office of the President
Washington, DC 20500

Dear Frank:

In response to your letter of September 14, 1977, regarding NASA's possible role in UFO matters, we are fully prepared at this time to continue responding to public inquiries along the same lines as we have in the past. If some new element of hard evidence is brought to our attention, in the future, it would be entirely appropriate for a NASA laboratory to analyze and report upon an otherwise unexplained organic or inorganic sample; we stand ready to respond to any bona fide physical evidence from credible sources. We intend to leave the door clearly open for such a possibility.

We have given considerable thought to the question of what else the United States might and should do in the area of UFO research. There is an absence of tangible or physical evidence available for thorough laboratory analysis. And because of the absence of such evidence, we have not been able to devise a sound scientific procedure for investigating these phenomena. To proceed on a research task without a disciplinary framework and an exploratory technique in mind would be wasteful and probably unproductive. I do not feel that we could mount a research effort without a better starting point than we have been able to identify thus far. I would therefore propose that NASA take no steps to establish a research activity in this area or to convene a symposium on this subject.

I wish in no way to indicate that NASA has come to any conclusion about these phenomena as such; institutionally, we retain an open mind, a keen sense of scientific curiosity, and a willingness to analyze technical problems within our competence.

Very truly yours,

Original Signed By
Robert A. Frosch

Robert A. Frosch
Administrator

bcc: A, AD, S-1, ~~L~~-1, AX, NHS-23
LF/Waggoner, ~~NHS/Lichty~~ 77

Enclosure attached as background

AX-1/D.Williamson,Jr.:djs:12-20-77

Note: 20 copies made from original & given to AX/Smith to be used as enclosures to 4 FOIA letters per AX request. RK 1/11/78

11

C:Mlh:C7739f

AUG 9 1982

Honorable James J. Florio
House of Representatives
Washington, DC 20515

Dear Mr. Florio:

This responds to your letter of July 28 to Administrator Beggs on behalf of Mr. Fred Schaefer concerning unidentified flying objects (UFO's).

First, you asked if UFO sightings were investigated by NASA. In short, they are not. NASA has no pictures, files or sighting reports and is not conducting a continuing UFO investigation. Second, you requested NASA's opinion on what responsibility the Government has in cases where UFO's are detected in air traffic lanes or around defense installations. We suggest that, for the most appropriate response to these queries, you contact the following organizations that have jurisdiction in these matters: the Federal Aviation Administration and the United States Air Force (which you have already done).

We regret that we cannot provide a more positive reply. However, if we can be of future assistance, please let us know.

Sincerely,

Original Signed By
John F. Murphy

John F. Murphy
Assistant Administrator
for Legislative Affairs

C:MKKleinsorge:lh:8/5/82:58396

cc: A, AD, L

6)

NASA Rejects Carter Request To Reopen UFO Investigation

A12 Dec 28, 1977 WPOST

Associated Press

The U.S. space agency has rejected a White House request to reopen a government probe into unidentified flying objects, saying it would be "wasteful" and probably unproductive.

But the National Aeronautics and Space Administration said it stands ready to analyze any "bona fide physical evidence from credible sources" — evidence that it said has never been found.

The rejection was made in a letter sent last week by NASA Administrator Robert Frosch to Dr. Frank Press, President Carter's science adviser. Press said he accepted NASA's conclusions and did not plan to pursue the matter.

In 1969, the Air Force closed the government's formal UFO investigation, called Project Blue Book. After 22 years of study and considerable expense, the Air Force concluded that, in the absence of significant findings, continuation of the project was unwarranted.

In a letter to Frosch in July, Press asked that NASA become the government's focal point in a "national revival" of interest in reports of UFO sightings. He recommended that the agency establish a small panel of inquiry.

Press said there was an upsurge in letters received by his office asking about UFOs, especially from young people. He said his staff was too small to answer them and assigned the job to NASA.

Many of the recent letters, averaging two or three a day, have been prompted by the new UFO movie, "Close Encounters of the Third Kind." Several demand that Carter make good on a campaign promise that if there were any secrets about UFOs he would flush them out.

Carter reported in 1973, while governor of Georgia, that several years earlier he had seen a UFO in the form of a "glowing light" in the night sky. "I don't laugh at people anymore when they say they have seen UFOs because I've seen one myself," Carter was quoted as saying.

Frosch wrote Press that a NASA technical committee had carefully considered establishing a UFO panel. "I do not feel that we could mount a research effort without a better starting point than we have been able to identify thus far," he added.

"I would therefore propose that NASA take no steps to establish a research activity in this area or to convene a symposium on this subject."

7)

NASA: No to UFOs

TODAY 2E 1 JAN. 1978

NASA's rejection of President Carter's request for a UFO study is apt to draw several kinds of reactions — some of which could be detrimental to the space agency.

Normally, if the White House says jump, federal agencies don't question it, except to ask, "How high?" Hence, there is a risk that NASA's refusal to take up a project suggested by the president might at least slightly color Carter's attitude toward the agency.

That would be an unfortunate development at a time when NASA's budget is undergoing its most severe questioning. The Space Shuttle program is already a prime target, with one launch base and major hardware facing the fiscal axe.

Looking at the matter nonpolitically and with scientific objectivity, we believe NASA administrator Robert Frosch's decision is a reasonable one. In the absence of tangible evidence to indicate the actual existence of UFOs, the space agency could do little more than chase after stories told by witnesses who say they saw something.

As Frosch wrote in his letter to the White House: "I do not feel that we could mount a research effort without a better starting point than we have been able to identify thus far. . . to proceed on a research task without a disciplinary framework and an exploratory technique in mind would be wasteful and probably unproductive."

Although NASA's stand is reasonable, it risks more than merely provoking President Carter. It could be seen by many people throughout the country as a desire by NASA to either shirk its duty or keep hidden knowledge it already has.

Let's face it, there are hundreds of thousands — maybe even millions — of Americans who believe in some type of UFOs. The Harris Survey and other polls indicate that persistent belief.

Despite a dearth of credible evidence, even after more than 20 years investigation by the Air Force in "Project Bluebook," the public remains convinced. And movies such as the current hit "Close Encounters of the Third Kind" serve to heighten the speculation and belief.

We only hope that NASA's stance on this matter will not subject the agency to "close encounters" of the old familiar kind — political pressure and unwarranted budget assaults.

8)

LC-5:Acb January 3, 1978

MEMORANDUM

TO: AX-1/Dave Williamson

FROM: LC-5/William H. Allen

SUBJECT: UFO's

George Chatham of the Congressional Reference Service of The Library of Congress has a question on Dr. Frosch's letter of December 21 to Dr. Press.

The first paragraph of this letter contains the statement "we stand ready to respond to any bone fide physical evidence from credible sources". Chatham wants to know if NASA regards photographic negatives, documented with technical data on the camera used, as, "physical evidence". He believes NASA is uniquely qualified to evaluate imagery.

Chatham previously called me about the statement attributed to you by the Associated Press that "a photograph is not a measurement". As a former photo interpreter and an experienced photographer he is convinced that a properly documented photograph is evidence.

Is NASA prepared to evaluate documented imagery of UFO's? If not, what is the rationale for the decision not to do so?

cc: SC-4/Dr. Henry

9

LC-5:JFcb:N3249365f

FEB 10 1978

Honorable Richard S. Schweiker
United States Senate
Washington, DC 20510

Dear Senator Schweiker:

This is in response to your recent inquiry on behalf of Mr. Kevin Bobb concerning the investigation of UFO's.

As outlined in the enclosed information sheet, NASA was recently asked by the President's Science Advisor, Dr. Frank Press, to consider UFO research; however, NASA declined to establish a research activity in this area.

Please let us know whenever we may be of further assistance to you.

Sincerely,

Original Signed by
JOSEPH P. ALLEN
Joseph P. Allen
Director, Legislative
Affairs Division

Enclosure

10)

C:PSN:bb:C2856/Al6784f

SEP 18 1980

Honorable Tony Coelho
House of Representatives
Washington, DC 20515

Dear Mr. Coelho:

Dr. Frosch has asked me to respond to your August 18 letter on behalf of Mr. Tom Marsella and Mr. Brad Blankenship who are producing a documentary about Unidentified Flying Objects (UFO's).

Although NASA is the focal point for answering public inquiries to the White House relating to UFO's, it is not engaged in a UFO research program, nor is any other government agency.

I am enclosing an Information Sheet (Number 78-1) which describes present policy. Page seven lists some organizations which review UFO sighting reports. Your constituents may wish to communicate with one or more of these.

While some of the astronauts did see some things there has never been a confirmed UFO sighting. In vertually every case there was a more feasible explanation than UFO's; such as debris, rocket stage panels, etc.

The February 1977 issue of Space World, Vol. N-2-158, published by Palmer Publications, Inc., Amherst, Wisconsin 55460, contains an excellent article on "Astronauts and UFO's--The Whole Story." We are enclosing a copy of the article which we believe will be of interest to Messrs. Marsella and Blankenship.

I hope that this information will prove useful.

Sincerely,

Original Signed by
TERENCE T. FINN

Terence T. Finn
Director, Office of
Legislative Affairs

Enclosure
cc: AEM-2, A, AD
LFF-3/Gene Marianetti
JSC/CB/Alan Bean
JSC/I. Scott
Larry Medway _____
Pat Newcomer _____
C/PSNewcomer;bab:58395:9/9/80
Rewritten 9/16/80 per Mr. Medway

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SET 1

INVITED ESSAY

UFOs and NASA

RICHARD C. HENRY

Department of Physics and Astronomy, The Johns Hopkins University, Baltimore, MD 21218

Abstract—In 1977 President Carter's Science Advisor recommended that a small panel of inquiry be formed by NASA to see if there had been any new significant findings on UFOs since the US Air Force-sponsored investigation of UFOs ("Condon Report") a decade earlier. Five months later, NASA responded to that recommendation by proposing "to take no steps to establish a research activity in this area or to convene a symposium on the subject." This article offers a partial inside look at how that decision was made at NASA.

Introduction

Forty years ago Kenneth Arnold's sighting of "flying saucers" inaugurated the modern era of observation of Unidentified Flying Objects, or UFOs. The possibility that some UFOs are actually spacecraft, bearing intelligent beings from another world, has focused intense public interest on the subject.

While only a very small number of reputable scientists has ever taken UFOs seriously, the related search for radio signals from other civilizations has slowly increased in "respectability" over the decades following the pioneering suggestion of such searches by Cocconi and Morrison (1959). A turning point occurred, however, when Hart (1975), and Tipler (1980), argued convincingly that an intelligent civilization in the galaxy would rapidly physically colonize the galaxy (see also Jones, 1981). Their suggested conclusion is that we are in fact the only civilization in our galaxy, if not the Universe.

An alternative conclusion is that one should perhaps take more seriously the possibility that some UFO reports do represent manifestations of galactic intelligence.

The canonical study of that possibility is "Scientific Study of Unidentified Flying Objects" (Condon & Gillmor, 1968), the so-called "Condon Report," which concluded, despite Condon's clearly negative feelings about the value of UFO study, that of 59 cases studied, two involved "probable UFOs" and two "possible UFOs" (Sturrock, 1987).

Over the second half of the year 1977, the National Aeronautics and Space Administration found itself, as a result of a letter from the White House, considering whether more should be done on the subject of UFOs, and in particular, whether NASA should do it.

NASA's final response, which came at the end of 1977, was worded cautiously, but in effect said "no" to the White House. The present paper bears on how NASA coped with the White House request.

Acceptance by the establishment of the notion that alien intelligences are active in the vicinity of the Earth, would involve a profound change in a fundamental paradigm that governs our activity as a society. (For example, President Reagan has remarked, to Mikhail Gorbachev, that American and Soviet societies would bury their differences if the world were threatened by an alien intelligence.)

Also, NASA has a large science constituency. According to a *Science Magazine* report (16 December, 1977, p. 1128) "NASA seems to fear that the reopening of the question of the genuineness of visitors from outer space will legitimize a subject most establishment scientists consider phony and a waste of time."

How exactly did NASA cope with this "hot potato," and why did NASA decline the White House request? In the next section I describe NASA's interaction with the White House, and in the following section I specify more completely the aim of the present paper. The remainder of the paper details aspects of NASA's activity in dealing with the White House request.

UFOs: NASA and the White House

On July 21, 1977, Dr. Frank Press, Science Advisor to President Jimmy Carter, sent a "Dear Bob" letter to Dr. Robert Frosch, Administrator of the National Aeronautics and Space Administration.

The letter opens by indicating that the White House "is becoming a focal point for an increasing number of inquiries concerning UFO's," and Press suggests that NASA should instead become the focal point for general correspondence, and that those inquiries which come to the White House henceforth be sent to the designated desk at NASA.

Press goes on, however, to say that "since it has been nearly a decade since the Condan (sic) report, I believe that a small panel of inquiry could be formed to see if there are any new significant findings" on the subject of UFOs. He suggested that the panel of inquiry "could be formed by NASA," and stated that "since this is a public relations problem as much as anything else, people who are known to be interested in the problem and also highly known, such as Carl Sagan, ought to be involved."

His letter is reproduced at the end of the paper as Appendix 1.

NASA, and the country, were aware that President Carter himself had once reported a UFO sighting. In an early draft of an Information Sheet (Number 78-1), prepared in early 1978 (that is, following NASA's responses to Press's letters), NASA described Carter's sighting as follows:

> *PRESIDENT CARTER's UFO SIGHTING*—While serving as Governor of Georgia, Mr. Carter reported to NICAP that he had seen a bright, moving object in the sky over Leary, GA in October 1969. He said the object was visible for 10 to 12 minutes

and, at one point, shone as brightly as the Moon. The regional NICAP representative investigated the sighting and reported there was no evidence to support anything beyond placing what Mr. Carter saw in its "unidentified" category.

Thus, it could not be completely clear to Dr. Frosch exactly what the significance of Press's letter was—simply an attempt to clear Press's desk of mail that he was not equipped to answer, or a White House expression of real interest in UFOs.

Frosch responded to Press on September 6, 1977 (Appendix 2), indicating that NASA was "inclined to agree with your recommendation," but indicating that "there are a number of questions that need to be resolved before any formal program is undertaken." In particular he noted that "a panel of inquiry such as you suggest . . . would require some additional resources [money] for the inquiry and for follow on activity . . . we should assure ourselves that an inquiry is justified. I believe we could do this by naming a NASA project officer to review reports of the last ten years and to provide a specific recommendation relative to any further inquiry by the end of this year. If you concur, I will initiate this action." He enclosed, for Press's information, a NASA Information Sheet (76-6) on "Unidentified Flying Objects" (Appendix 3). Press gave the requested concurrence on September 14, 1977 (Appendix 4).

Then, on December 21, 1977, Frosch, in a remarkable letter to Press, "proposed" that "NASA take no steps to establish a research activity in this area [UFO's] or to convene a symposium on the subject" (Appendix 5). There is no mention of a project officer, or of any review "of reports of the last ten years," but Frosch indicates that "we have given considerable thought to the question of what else the United States might and should do in the area of UFO research. There is an absence of tangible or physical evidence available for thorough laboratory analysis," and he indicates that "we stand ready to respond to any *bona fide* physical evidence . . ."

Purpose of This Paper

What happened within NASA, resulting in the two letters that Frosch wrote to Press? How does a government agency formulate a response to, in effect, the President of the United States, on a topic of the peculiar sensitivity, interest, and controversial nature, as UFOs? It is the purpose of the present paper not to actually answer that question, but to provide information bearing on that question. To actually answer the question, as we shall see, would require substantial additional information from many individuals. Thus, the present paper represents an "interim report" that might be followed in the future by a more global inquiry by others.

In order to understand why this paper is not more comprehensive, it is necessary to understand how NASA works, and its structure.

NASA

NASA is a large organization, with Centers in various parts of the country. In 1976 (but to a much lesser extent today) the Directors of the various Centers played a powerful role in NASA policy making. Apart from those specific individuals, however, NASA policy making was concentrated entirely in persons at NASA Headquarters in Washington, DC.

The structure of NASA Headquarters, as of January 1978, is shown in Figure 1. From October 1976, to August 1978, I was Deputy to Mr. Bland Norris, Director of the Astrophysics Division, which was part of the Office of Space Science; that Office was directed by the Associate Administrator for Space Science, Dr. Noel W. Hinners; his Deputy was Mr. Tony Calio. Hinners reported directly to the Administrator, as did Dr. John Naugle, Science Advisor. Policy making stopped with Hinners, all of us below being providers of information and advice, and executors of policy.

NASA Headquarters was an interesting and, to an academic person, strange place. It had a great degree of vertical structure. Hinners would occasionally, and in an almost embarrassed manner, stroll around the fifth floor from the "front office" he inhabited. The Administrator (on the seventh floor) was even more inhibited—an Administrator's ramble in the building was a formal, prepared, activity. Such things did not happen often. This was not a reflection of the personalities of the two men (in fact both are personally warm, intelligent, and charming), it was a product of the institutional structure of NASA itself.

Coherence of policy and activity was maintained in a clever, effective way, best illustrated by an example. Suppose that scientist John Doe writes an angry letter to someone at some level in NASA. The letter is immediately copied (often without the recipient even seeing it) and sent to all the lowest levels in Headquarters that the secretary deems relevant, considering the content of the letter (Naugle joked that he had once received a letter from an old girlfriend, "and it had gone *everywhere,* since the subjects were so *general*!"). A draft reply is generated by the lowest-level person on the distribution, and this draft works its way up through the entire organization for, finally, signature and mailing by the original recipient (who now reads the letter perhaps for the first time). At any point in the chain, the draft reply letter may be rewritten by the higher official. Each level must concur with the version sent higher, by initialing in the appropriate place.

This system works extremely well. Everyone in NASA Headquarters who needs to know about the letter knows it, and attempts from outside to set the system against itself are doomed. This same mechanism is often used in areas of policy, to obtain comment from many levels.

The result of this vertical structure, however, is that it often is not clear in the end just where the policy that is "signed off on" by the responsible senior official actually originated, or what precisely motivated specific items or changes in items. Each individual sees only what flows up or down through

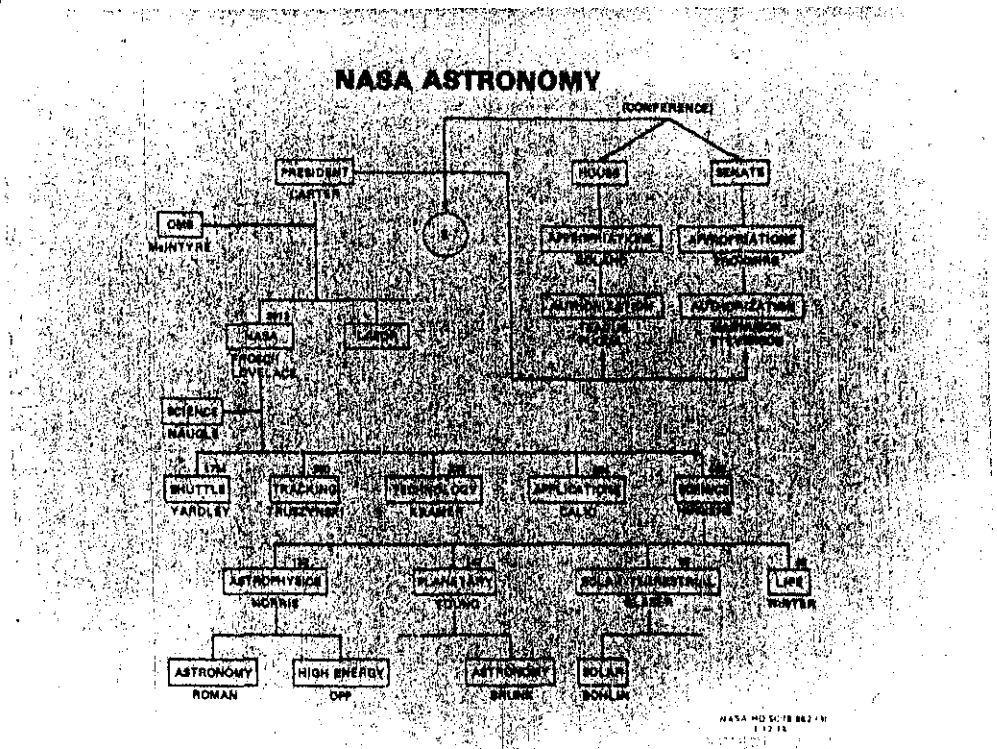

Fig. 1. The structure of policy making, policy administration, and funding, with regard to NASA, in January 1978. Numbers indicate annual budget in hundreds of millions of dollars.

his or her level, not the total picture, which is seen by no one. This of course holds true in the case of my personal perspective on the NASA-White House UFO activity. Thus, in the present paper on NASA's activity regarding the UFO question, I can only present certain documents, and attempt a little detective work toward the question of "who shot John?", that is, who made the basic NASA decision concerning UFOs, a decision apparently still in force today. Let us begin.

The Author at NASA

Bland Norris telephoned me (I was an Associate Professor at The Johns Hopkins University) from Woods Hole during the summer of 1976, and in effect offered me the position of his Deputy. He was almost certainly influenced to do this by George Field, the eminent astronomer who was then head of the Physical Science Committee (PSC) (the internal NASA Committee advisory to Hinners). At Woods Hole a high-level group was studying the Hornig Committee report on the proposed management structure for the proposed Space Telescope, and some of the group apparently felt that having a scientist (such as myself) from the astrophysics community move to NASA Headquarters for a few years would help in "selling" the Space Telescope to the Office of Management and Budget, and Congress. Norris, an excellent engineer and administrator, had no knowledge of astrophysics (although he did take a Community College night course in astronomy during my period at NASA). On my arrival at Headquarters, I found that in fact Space Telescope was in excellent hands with Warren Keller and Nancy Roman. Indeed, a pleasant surprise was the uniformly excellent quality of people I found in the Office of Space Science.

At about the same time that I arrived, David Morrison, a well-known scientist from the University of Hawaii, came to occupy a roughly similar position in the Planetary Division. Morrison was to try to sell Galileo (a mission to the planet Jupiter), while I sold Space Telescope, and there was friendly rivalry between us. (Both Space Telescope and Galileo did succeed in becoming approved missions but—a decade later—neither has been launched.)

Shortly after my arrival at NASA, Hinners' Deputy, Tony Calio, strolled down the hall to my office with something on his mind. I did not know, yet, how unusual this was. He wanted someone to handle SETI, the "Search for Extraterrestrial Intelligence," and he had fixed on me. As this subject is clearly relevant to NASA's attitude toward UFOs, I will expand on this, my earlier (and later) involvement with SETI.

John Billingham, at NASA's Ames Research Center, was the person who was focusing an attempt to get NASA to fund, and indeed to carry out, a radio search for extraterrestrial intelligence. A detailed report, funded by NASA (Morrison, Billingham, & Wolfe, 1977) was in preparation. Calio asked me to look into the matter and recommend whether the Office of

Space Science should fund SETI, and at what level. An interesting complication was that NASA's Jet Propulsion Laboratory (JPL) had a different approach to SETI than had Ames, and wanted to carry out its program. In essence, Ames wanted to look with very great sensitivity at small numbers of nearby stars, at specific frequencies which Ames had somehow deduced would be used by other civilizations, while JPL wanted to survey the whole sky at a vast number of frequencies, paying the price, of course, of greatly reduced sensitivity. I quickly became convinced that the JPL approach was the right one, and that the Ames approach was a waste of money. It seemed to me that it was not right for the young, new, poor civilization (us) to have to spend taxpayers' money to get great receiving sensitivity; instead, the old, experienced, rich civilization (them) should spend the money to get great transmitting power. Also, I felt that if there were civilizations broadcasting from nearby stars, we would already know it; that in fact they would be aware of us and might even be here (UFOs?).

A good indication of my attitude on these matters is given by the letter I wrote (Appendix 6) to Major Ret. Colman S. Von Keviczky, in reply to his letter (Appendix 7) to Ichtiaque Rasool (who was Hinners' personal science advisor).

Billingham pressed me hard to come up with some immediate funding for his SETI activity and, quite remarkably, I was able to do so. Someone had told me that the front office had some few hundred thousand dollars available, as a result of some reprogramming. This was unusual; normally only the lowest level people at NASA Headquarters actually had money, and if you tried to take it from them, they made you very aware of how much damage you were doing. Ed Wash, Hinners' excellent financial man, told me in his usual worried way that he had wanted to reserve the reprogramming money for solar sailing (which was about to enter a "shoot-out" with the solar electric propulsion over which was to become the planetary program propulsion "new technology" of the 1980's—rather pathetic in retrospect!). However, he gave me half the money, which I gave to Ames.

In formulating our budget for the next fiscal year, Norris and I placed the JPL program adjacent to, but above, the Ames program, with both of them right at the very bottom of our Astrophysics Budget priorities, and then we sent the budget up to Hinners for possible re-prioritization and for merging of our budget with those of the Planetary, Solar-Terrestrial, and Life Sciences (see Figure 1) Divisions.

Tony Calio himself was quite enthusiastic on the subject of SETI. Hinners was considerably less enthusiastic; in fact Calio told me at one point "this is the only thing Noel and I have ever come apart on." Possibly Hinners did lack belief in the reasonableness of SETI, but I suspect that his greatest concern was for the stature of his science program and its prospects. At a public lecture at Princeton, Hinners asked the audience to "vote" as to whether SETI represented a proper use of public funds (they agreed it did).

It was my understanding, some weeks after budget submission, that I had

won a victory, albeit a Pyrrhic one: The NASA budget that emerged, and was sent to the President's Office of Management and Budget (OMB), contained only the JPL program, but unfortunately at too low a priority level to survive OMB. I was astonished that when the budget was returned from OMB, SETI was still included; that is, it had been moved to a sufficiently higher position in the Carter "zero-based budgeting" priority that it had survived OMB's financial knife.

This is a vivid example of how one can seldom be certain of "who shot John." For example, at whose level was the JPL program separated from the Ames program? Hinners? Frosch? And who at OMB did the reprioritizing, and why? On the latter question, I was able to obtain some information, much later. On May 17, 1978, Alan Lovelace, Frosch's Deputy, wrote to W. Bowman Cutter, Executive Associate Director for Budget, Office of Management and Budget, inviting him to come over to NASA Headquarters some evening for dinner, and an informal briefing on astronomy by me and David Morrison. Cutter had apparently expressed an interest in such a briefing some time in April. The dinner took place on July 13, 1978. Frosch was not able to be present, and neither was Hinners: The senior NASA person present was Adrienne Timothy, who had replaced Rasool, who had left NASA. The dinner and subsequent slide shows went very well; in particular, Morrison did his usual brilliant job expounding the spectacular NASA planetary images. At dinner things were sufficiently informal that I felt able to mildly enquire about how it had happened that SETI had survived OMB. Cutter replied "I took astronomy at Harvard from Carl Sagan, and I did it for Carl."

The subsequent history of SETI on Capitol Hill, was the award of a Golden Fleece by Senator Proxmire (February 16, 1978), and the rejection by Congress of initiation of a SETI program. I was the person who was invited to the Hill to expound the program to Proxmire's aide, in preparation for the Fleece—rather fun, but sad for SETI. (After I left NASA, SETI was given to Life Sciences, and Proxmire's aquiescence was somehow obtained. A SETI program—JPL *and* Ames—is moving forward today.)

Our presence at the Cutter dinner is an example of the special role that Morrison and I played while at NASA, as active scientists with much greater technical knowledge of our fields than almost anyone else at Headquarters (but, I must add, negligible administrative ability, at least in my case, compared with almost anyone else at Headquarters). We were called on when technical substance and scientific depth were needed. I will end this section with another example of this, which is of special interest because President Carter was directly involved.

On November 15, 1977, I found on my desk a note for Bland Norris from David Williamson, Jr. I later learned that Williamson was "Code AX," Special Projects (Hinners was Code S, Science, and I was Code SAD, Science Astrophysics Deputy; the reader can use these Codes to track "who saw what," in certain of the appendices). Williamson was located on the

seventh floor, with the Administrator (Code A). (Williamson will play a prominent role in the discussion, below, of the UFO situation.) The note said "Bland . . . Jeff is expected to be calling Dick starting November 16 in the morning . . . Jeff has a 3" reflector . . . Frank Press hopes we can come up with a 7" Questar electric . . . the 7th floor offers its appreciation to the 5th floor for such an effective and controlled reaction." Bland let me know that my guess was right: "Jeff" was Jeff Carter, son of President Carter.

At Bland's request, I telephoned Frank Press, who let me know that the President and/or his son (it was not clear which) wanted to borrow a small telescope to take to Camp David over Thanksgiving.

To NASA Headquarters, "telescope" is a budget item that the astronomers want too many of. What it is physically, and where one might be obtained, was unknown. I exaggerate, but certainly, Headquarters contained only paper; no telescopes. The request had been routed from Frosch (an oceanographer) to Hinners (a geologist) to Henry (an astronomer). Someone found out that Marshall Spaceflight Center, in Huntsville, Alabama, had a 7" Questar telescope, and that furthermore, by great luck, a NASA plane was flying from Huntsville to Washington the next day (Press was emphatic that the President wanted no special flights or other waste of taxpayer dollars). I called Jeff, and later I had my wife, Dr. Rita Mahon, meet me at National Airport with my car. We loaded the large wooden crate in the trunk, and arrived at the White House about seven p.m. on Friday, November 18, 1977.

Rita and I spent about half an hour with President and Mrs. Carter, Amy Carter, and Jeff and Annette Carter, assembling the Questar and trying it out on the upper floor balcony of the south side of the White House. The night was mostly cloudy, but the moon was visible. President Carter kept the telescope for about a week, and then Bland Norris and I retrieved it from Jeff, who said that his father had made good use of it at Camp David.

UFOs

The reader now has some understanding of the environment at NASA Headquarters at the time that Frosch's letter of July 21, 1977 (Appendix 1), was received. Action (see Appendix 1) was assigned to Code F, but I don't recall a Code F, and my August 1978 Headquarters telephone book does not include any Code F. On July 29, Herbert J. Rowe, Associate Administrator for External Affairs (Code L), sent a note, confirming a meeting to be held August 3, 1977, 3:30–4:00 p.m., "to discuss the position NASA should take in regards to Dr. Press' recommendation," to the following persons: Gen. Crow, Dr. Hinners, Mr. Chapman, Mr. Newman, a person representing Joe Allen, and Dr. Henry. Dr. Joseph P. Allen, who was Director of the Office of Legislative Affairs (Code C), is the well-known astronaut ("we deliver"). Duward L. Crow was Assistant to the Deputy Administrator, Alan M.

Lovelace. Robert A. Newman was the Director of the Public Affairs Division, located in Code L. I am not certain what Chapman's position was; possibly he was Deputy to Rowe. My memory of the meeting is of desultory conversation, including General Crow saying in a bemused manner that his daughter believed implicitly that as a former Air Force General, he knew all about UFOs and was keeping it secret from the public. I believe that the only result of the meeting was that action (jargon for responsibility) was handed to Dr. Hinners, to formulate a recommendation to the Administrator.

After the meeting, I spoke in the hall with Hinners, letting him know that for many years I had been Astrophysics consultant to the Aerial Phenomena Research Organization (APRO), a private UFO research group that was located in Tucson, Arizona. My motivation was partly to let Hinners know that I had some specific relevant expertise on the subject at hand, but also to "warn" him that I was not a completely disinterested neutral party on the controversial question of UFOs.

From that point on, the only meetings on the subject that I recall attending were one or two very small (or even one-on-one) meetings in his office with David Williamson Jr. Williamson impressed me as being the most intelligent person in the building. He discoursed on UFOs to me at some length, and in an extremely knowledgeable way, and, as we shall see, he formulated for Hinners' signature the recommendation that finally went to Frosch.

In the meantime, it had leaked out to the world that Henry might be designated the NASA project officer for UFOs (in the end, no one was). For example, on September 22, 1977, Alan C. Holt, of VISIT, Inc., wrote to me "We understand that your assignment as Project Officer is forthcoming and that the 2–3 month study will begin approximately October 1." I sent the letter up to Hinners, with that sentence highlighted. Hinners replied "you sure do draw 'em in, SAD. I suspect they got word of this from out there somewhere." I received a November 7, 1977 newsletter from Stanton T. Friedman which contained the item "NASA will be taking a look at the UFO question in response to a lot of pressure on the White House which in turn pressured the Science Advisor which then pushed NASA. The scientist in charge of the inquiry is Dr. Richard Henry, Department of Astrophysics at NASA Headquarters." On November 1, 1977, someone in Senator Hatfield's office telephoned NASA, and Herbert Rowe (Code L) wrote, on November 3, to Senator Hatfield, in response ". . . NASA at this time is conducting a study of the literature for approximately the last ten years to determine whether it might be worthwhile to conduct any further investigation of UFO's at this time. A project officer has been assigned to the task of reviewing the UFO literature and he is presently organizing this task . . ." Of course, by this time Frosch and Press had had an exchange of letters (Appendices 2 and 4), and Rowe surely believed that a project officer must by now have been designated. Blind copies of Rowe's letter went to two Code L files (chronological and subject) . . . and to "SA/Henry." A type-

written note was attached: "Who is the project officer? He should be informed that a number of definitive overview documents have been (sic) by investigators at the request of the Committee on the subject of UFO's and these studies would be of help to him in compiling this information." A blue mark appeared at the disjoint point in the second sentence, and in blue the first sentence was crossed out and "Info for Dr. Henry fr Code C." inserted.

In addition to a certain number of letters from "pro"-UFO types, I had received two communications from "debunkers"—Phil Klass sent me (October 1, 1977) a copy of his book, *UFOs Explained* (Klass, 1976) marked "To Richard Henry with the hope this may shed useful light on an old controversy—And help you and NASA avoid the fate of "Tar Baby" and the late Dr. Ed Condon!" And Robert Scheaffer wrote to me on letterhead of the Committee for the Scientific Investigation of Claims of the Paranormal, ". . . be prepared to be deluged by mail from every kook and crackpot in the country, and even worse, be prepared for letters from the 'scientific' UFO investigators, who will appear reasonable and sane enough, yet are true believers in every sense of the word . . .". I replied (October 5, 1977) "I have not yet been assigned . . . you are very kind to warn me about other people who may write to me with views that differ from your own."

Of course, at this time I was attempting to think through what NASA's response to Press should be. However, Hinners had not asked me to do anything at all, much less prepare options or recommendations.

On October 20, 1977, I apparently saw for the first time Frosch's September 6 letter to Press (Appendix 2), and I immediately communicated my concern to Hinners (Appendix 8). My concern was that Frosch had promised more than he could deliver. I took the opportunity to recommend that "the NASA Project Officer chosen be given the highest U.S. security clearance, and also be provided with a letter from President Carter establishing his need to know regarding unidentified aerial phenomena." I went on to say that "If this procedure in not followed, there will be a hole as big as a barn door in any NASA "specific recommendation" that is *negative* on UFO's."

On October 21, 1977, I received a telephone call from Phil Klass, mildly enquiring whether I was indeed the project officer, and whether I had had any previous association with UFOs. I answered him frankly, and subsequently I decided to put down formally on paper for Hinners what I had previously explained to him verbally. My memo is reproduced as Appendix 9. The only part of the memo that needs clarification is item 3B; I did not literally mean "other dimensions"; this phrase is a result of having read John Keel's book, *Operation Trojan Horse* (Keel, 1970). The book impressed me as nonsense, but left me with an openness to the possibility that our present world-view is *fundamentally wrong;* it is this possibility that I intended to convey succinctly.

About this time, I must have learned of Press' concurrence on naming a project officer (Appendix 4) and I was surely expecting to either be named

project officer, or at least asked for advice as to who should be named. It appeared to me that Frosch was now *committed* to naming a project officer.

I expressed my thoughts as to what I would recommend be done, if I were named, in a draft memo for Hinners to send to Frosch, but it was never typed or submitted to Hinners for consideration, because I wasn't asked. According to the draft, Hinners would ask Henry to ask Dr. Stephen P. Maran (of NASA's Goddard Spaceflight Center, in Greenbelt, Maryland) to be the Project Officer. Maran would spend "two months full time" assembling information on "post-Condon" UFO reports, from APRO and other "pro"-UFO organizations, and obtain comment on these reports from Klass and Schaeffer. Maran would then draft a conclusion "as to whether or not further investigation of these incidents is warranted. He will not attempt to come to a specific conclusion on any one incident; that would be the goal of a full investigation. Rather, he will examine the whole pattern of incidents and ask, and suggest an answer to, the global question, is further work indicated. In the event that he feels that the answer is yes, he will sketch the nature of such an investigation, and indicate how it might come to some definite conclusion. His report will be reviewed by Dr. Henry, myself, and David Williamson, and presented to you on January 2, 1978."

At this point, I had not spoken with Maran, but the question was moot. The request from Hinners never came.

We now reach what, to my best information, is the critical point in NASA's efforts to deal with the UFO/White House situation. On October 31, 1977, Dave Williamson generated and distributed a draft memorandum, to be from Hinners to the Administrator. My copy arrived in an envelope marked "*EYES ONLY* SA/Dr. Henry." Despite the dramatics, the document, like all documents that I read at NASA, was not classified, even so much as "Confidential."

The draft memorandum is reproduced as Appendix 10, and as far as I recollect is identical to what I finally concurred in (verbally to Hinners) and that was sent by Hinners to Frosch. I will not summarize Appendix 10 here, as it needs to be read in its entirety at this point.

I thought the draft masterful. I also felt that while the draft recommended Option 2, anyone reading it would instantly grab for Option 1.

There was one thing that was wrong in the memo: the claim of lack of "tangible or physical evidence." There is in fact plenty of such evidence (for what it is worth). In the event, the Administrator's final decision, clearly based on this memo, dealt directly with that defect by stating to Press (Appendix 5) "we stand ready to respond to any bona fide physical evidence from credible sources." Frosch's letter to Press in fact combines parts of each of the two options, and was drafted by Williamson (see the last line of Appendix 5).

I had mixed feelings about the situation, before and after Frosch wrote his final letter to Press. A clear anomaly in the draft memo is the recommendation that the first phases of Option 2 be run out of Headquarters, and particularly at an extraordinarily high level (Hinners, Williamson, Chap-

man). NASA did *nothing* substantive at Headquarters itself. There is simply not sufficient manpower for Headquarters to carry out its administrative/budget/policy activity *and* projects as well (although of course Williamson's title was Assistant Administrator for "Special Projects").

This fact was rapidly brought into focus by a letter (Appendix 11) from Stanford University astrophysicist Peter A. Sturrock to Frosch, immediately following public release of Frosch's final letter to Press. Sturrock wanted to know, in effect, where to send the tangible evidence. The problem that this presented to Headquarters was nicely summarized in a memorandum by O. B. Lloyd, Jr. (Chief, Public Services Branch, Code L; Appendix 12). I received this memorandum with a copy of a "buck slip" from Bob Newman to Ken Chapman reading "Bill raises some good points here. Comments?" Chapman replied on the same form, "the original science problem was worked by Naugle/Hinners—I suggest we ask them for a position on handling any evidence. There are now two letters in suggesting or offering material evidence. Send a note to Naugle/Hinners asking how they plan to proceed." The slip is then marked "S-1 1. Hinners," and "P-1 2. Naugle," and finally scrawled on it is "Action to SC-Henry."

This finally gave me a chance to lay out my views to Hinners in some detail, and I did so in a memorandum on January 17, 1978 (Appendix 13). I thought that (a) NASA should be active, not passive, and (b) the substantive activity should take place at a NASA Center, as with any other NASA activity. I had by now spoken briefly, on one occasion, with my friend Steve Maran at Goddard, and he had not declined the role I envisaged for a Project Scientist. As my memo makes clear, I thought he would be ideal for the job.

And this is the end of the story. There was no response from Hinners to my memo. Sturrock, I understand, pursued an attempt to have NASA analyse a sample of material believed by some to be from a UFO. My file on UFOs, marked by me (for better or for worse), "The Secret NASA UFO file," contains a letter (Appendix 14) indicating that I did a little work supporting Hinners' and Williamson's handling of the follow-up, but I certainly did not do much. The final version of Information Sheet 78-1 (Appendix 15) represents to the world NASA's official position on UFOs. I had no hand in generating it. The draft of it that I have, indicates that the information on UFO groups was provided to Code L by Williamson. There is mention in 78-1 of Frosch's offer to respond to *bona fide* physical evidence, but no suggestion as to how to go about this.

I left NASA in the fall of 1978 to resume my academic position at The Johns Hopkins University.

Conclusion

Why did NASA turn down the President of the United States on UFOs? There is only fragmentary evidence, and so no definite conclusion is possible. We can, however, look at various possibilities.

a) Inhibition by Aliens

A reason that I have maintained an interest in UFOs since graduate school is that they are a perfectly possible "unscientific" element in the world. By "unscientific," I mean the following. Einstein's famous dictum, "Raffiniert ist der Herrgott, aber Boschaft ist Er Nicht,"* clearly does not apply to aliens, who might be very "Boschaft" ("malicious, spiteful, mischievous, malignant, wicked") indeed. With perhaps a billion years of biotechnology behind them, they could, if so inclined, insert agents at will into our society. You might not even be aware that you are an alien agent, if you are.

No conclusion on this possibility seems possible.

b) Inhibition by the US Government

Does the US government know all about UFOs and did a carefully placed person within NASA act to deflect/discourage any NASA investigation of UFOs?

There is some evidence, although it may well be fraudulent, of a US government "cover up" on UFOs (Moseley, 1987).

The person who "shot John" on UFOs, at NASA, surely was Dave Williamson (although he clearly had aid from others, including the author). His role in doing so was not at all hidden. On Saturday, November 26, 1977, while President Carter was using the Questar at Camp David, I was in a swimming pool in Florida. I happened to glance at a newspaper vending machine, and an eerie feeling of unreality swept over me. Staring at me was Dave Williamson, in a front-page photograph.

The notion that Williamson, or someone else at NASA, knowing that UFOs do include clear evidence for alien intelligence, deflected the inquiry to protect this government-held secret, can, I think, probably be rejected, simply because if it were true, why would the President or his science advisor have made the request in the first place? Of course, one could still imagine a "John Poindexter"-type isolation of the President, but this seems unlikely.

c) Belief by NASA That UFOs Are Nonsense

All I can say regarding this possibility is that I myself do not think that UFOs are nonsense, and no one at NASA Headquarters ever expressed such views in my presence. The general attitude seemed to me to be what I might call "repressed open mindedness."

d) Fear of Ridicule

I felt this myself, and expressed it to Hinners (Appendix 9).

NASA Headquarters scientists and administrators had no fear of the scientific community. As no man is a hero to his valet, so no Nobel Prize

* "The Lord God is subtle, but He is not malicious."

winner is a hero to his grant administrator. But the negative reputation of UFO studies clearly had its effect on NASA.

e) More Important Things To Do

I have a note, dated November 29, 1977, from "Noel" [Hinners] to "Dave" [Williamson] reading "A sampler! It's obvious that going route of Option 1 will buy us neg. kudos but let's just be prepared. An Option 1 decision based on *no* look is fraught with the difficulties we've been discussing."

The Option 1 that is mentioned is presumably that in the Williamson draft memorandum (Appendix 10).

This suggests that Hinners favored Option 1. Just as in the case of Hinners' attitude on SETI, I speculate that his fundamental motivation was a desire not to cloud his extremely effective NASA space science program with activity that might detract in some way. I felt the same way. Perhaps in this affair, having a positive attitude to UFO study, I should have taken a more aggressive stance than I did, but I was worried about having to pay for it: If you are the one who wants it, generally you are the one who pays for it, and I considered it wrong to spend astrophysics funds on UFO study, despite feeling that UFO study was a worthy use of public funds. Also, I did not feel that a Goddard project was very likely to produce a more substantial result than did Condon's Colorado project. The only real defect in the Colorado project was in the Director's inaccurate summary, not the substance of the investigation itself. If the UFO phenomenon includes an element that is due to the presence of an alien intelligence in our vicinity, it was doubtful to me that that fact could ever be established by a "Blue Book" or "Colorado" or my proposed "Goddard" and its follow-up, that is, by incremental investigation and accumulation of cases of varying degrees of credibility. Carl Sagan has said that extraordinary claims require extraordinary proof, and he is right. Extraordinary proof of the "reality" of UFOs cannot easily come from us; it must surely come from the UFOs, if it will.

Postscript

The manuscript of this paper was sent to President Carter, Frank Press, David Williamson, and Noel Hinners for comment. Williamson, responding for himself and Hinners, made clear that the NASA program of analysis of hard evidence was considerably more extensive than I had realized: "We entertained a great number of inquiries and ran a number of analyses . . . we developed a simple procedure for anyone's getting a suspect sample to NASA (with a quitclaim so we could cut, drill holes, and so on) . . . I am glad we had the courage to do the right thing for the right reason." Press responded but had no comment to make. Carter returned my letter and marked it "I don't have any comment, except below"; and below, beside my sentence "The most important point that you could clarify, if you will, is

whether you yourself were behind Frank Press' letter of July 21, 1977, to NASA," is the word "no."

Author's Note. Photo reproduction (rather than typesetting) has been used for the Appendices, in order to leave clear and apparent all of the tracking notes and approvals that are on the original documents. Some price is paid, of course, in terms of legibility.

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Appendix 1

July 21, 1977, Letter From Dr. Frank Press to Dr. Robert Frosch

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20500

July 21, 1977

Dear Bob:

We have discovered that the White House is becoming the focal point for an increasing number of inquiries concerning UFO's. As you know, there appears to be a national revival of interest in the matter with a younger generation becoming involved. Those of us in the Executive Office are ill-equipped to handle these kinds of inquiries.

It seems to me that the focal point for the UFO question ought to be in NASA. I recommend two things: since it has been nearly a decade since the Condan report, I believe that a small panel of inquiry could be formed to see if there are any new significant findings. Since this is a public relations problem as much as anything else, people who are known to be interested in the problem and also highly known, such as Carl Sagan, ought to be involved. This is a panel of inquiry that could be formed by NASA.

The second thing I would like to suggest is that NASA become the focal point for general correspondence and that those inquiries which come to the White House be sent to the designated desk at NASA.

Yours sincerely,

Frank

Frank Press
Director

Action Copy to F
Info Copy to A, ADA, AA, AX, L
A34611
Rec'd in NASA 7-25-77
Response Date 8-8-77
Prepare Reply for Signature of A

Robert Frosch
Administrator
National Aeronautics and
Space Administration
Washington, D.C. 20546

Appendix 2

September 6, 1977, Letter From Dr. Robert Frosch to Dr. Frank Press

Ltr: SA/Dr. Henry

SEP 6 1977

Honorable Frank Press
Director
Office of Science and Technology Policy
Executive Office of the President
Washington, DC 20500

Dear Frank:

In your letter of July 21 you expressed the view that NASA should be the focal point for UFO matters, and specifically recommended that a panel of inquiry be formed by NASA to see if there are any significant new findings since the Condon report and that NASA become the focal point for general correspondence and inquiries.

While we are inclined to agree with your recommendation, there are a number of questions which need to be resolved before any formal program is undertaken. You may know that the Air Force served as the focal point for UFO matters during the 1960's and devoted considerable resources to the program. It, however, concluded, in the absence of significant findings, that the program warranted no more than routine form letter answers to inquiries and has been handling the program in that manner since about 1970. It now handles a small number of inquiries, perhaps 10 to 12 monthly. NASA, likewise, handles routine inquiries by form letter response, 10 to 12 formal inquiries and a somewhat larger number of public inquiries monthly. NASA uses the information sheet attached in its responses. The Air Force uses similar data.

From the point of view of the Administration as a whole, this is economical. However, it fails to provide a recognized focal point for technical appraisal of sightings and understandably results in some frustration to individuals making what they consider to be serious inquiries.

A panel of inquiry such as you suggest might possibly discover new significant findings. It would certainly generate current

interest and could lead to the designation of NASA as the focal point for UFO matters. It would require some additional resources for the inquiry and for follow-on activity. Before committing to this, I feel that we should assure ourselves that an inquiry is justified. I believe we could do this by naming a NASA project officer to review reports of the last ten years and to provide a specific recommendation relative to any further inquiry by the end of this year. If you concur, I will initiate this action.

Very truly yours,

Original Signed By
Robert A. Frosch

Robert A. Frosch
Administrator

Enclosure

cc: AA
AC
ADA
S
F
L
W
C
AE

F/RA Newman:elt:8/18/77 A-34611
Rewritten:ADA/L:Rowe/Crow:8/25/77
Rewritten:ADA/Crow:aom:9/1/77

Appendix 3

NASA Information Sheet 76-6, "Unidentified Flying Objects"

NASA
National Aeronautics and Space Administration

INFORMATION SHEET
FGM 76-6

Prepared by
FGM/Office of Public Affairs
NASA Headquarters
Washington, D.C. 20546

UNIDENTIFIED FLYING OBJECTS

NASA is not involved in research concerning unidentified flying objects. Reports of unidentified objects entering U.S. air space are of interest to the U.S. military as a regular part of defense surveillance, but no government agency is conducting an ongoing investigation of UFOs at this time.

An extensive study known as Project Blue Book was undertaken in the 1960's by the U.S. Air Force through a contract with the University of Colorado. Based on the findings of this study as reviewed by the National Academy of Sciences, the Air Force terminated the project December 17, 1969.

The University of Colorado report, entitled Scientific Study of Unidentified Flying Objects, was published in paperback by Bantam Books. A three-volume photoduplication (AD 680:975-6-7) may be purchased for $18 from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151. The complete reports were transferred from Air Force storage in July 1976 to The National Archives, 8th Street and Pennsylvania Avenue, N.W., Washington, DC 20408. Those wishing to view the report must obtain a researcher's permit from the National Archives and Records Service.

The University of Colorado study reached the following conclusions: (1) there was no evidence that the subject of UFOs had been "shrouded in official security"; (2) UFOs did not constitute any hazard to national security; (3) two decades of UFO study had made no significant contribution to scientific knowledge; and (4) further extensive study of the general topic could not be expected to contribute meaningfully to the advancement of science.

The panel of the National Academy of Sciences agreed with these conclusions and further commented, "On the basis of present knowledge the least likely explanation of UFOs is the hypothesis of extraterrestrial visitations by intelligent beings."

Although the U.S. government no longer dedicates funds and personnel to the study of UFOs, investigations are continuing under private auspices. The Center for UFO Studies, P.O. Box 11, Northfield, Illinois 60093 (telephone 312/491-1870) is a source for publications and information on UFO phenomena. The National Investigating Committee on Aerial Phenomena, Suite 23, 3535 University Boulevard, Kensington, Maryland 20795 (telephone 301/949-1267) also replies to requests for general information. Both organizations investigate reported sightings of unidentified flying objects.

July 1976

NASA-HQ

Appendix 4

September 14, 1977, Letter From Dr. Frank Press to Dr. Robert Frosch

Cy: SA 95 9/20/77 SA cy

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON D.C. 20500

September 14, 1977

Dear Bob:

I have your letter of September 6 responding to my letter of July 21 recommending that NASA become a focal point for Federal activity in UFO matters.

I am pleased that you agree that NASA can handle the public inquiries on UFOs. The fact that my Office and the White House can direct such inquiries to NASA will relieve my small staff of a responsibility we are not equipped to handle. Therefore, I have asked my assistant, Stan Schneider, who has discussed this matter with your Executive Officer, Ed Andrews, to forward all our UFO inquiries to NASA.

Regarding the recommendation for NASA to become a focal point for the scientific and technical appraisal of the UFO phenomenon, I can understand your reluctance to commit the agency to a formal program before evaluating the current status and recent history of UFO activity and determining what might be involved in conducting a serious study on this matter. Therefore, I concur with your idea of assigning a project officer at NASA to review the situation before deciding whether to undertake a more formal inquiry.

By copy of this letter, I am informing Jim Purks of the White House Media Liaison Office of our exchange of ideas on this subject so that they are in the communications loop on this situation. I will suggest that he forward all public inquiries on UFOs to the White House to NASA (Code 4) for response.

I would appreciate it if NASA could keep my office, through Stan Schneider, informed of any progress the agency makes toward a decision on a possible UFO study.

Yours sincerely,

Frank Press
Director

Honorable Robert A. Frosch
Administrator
National Aeronautics and
Space Administration
Washington, D.C. 20546

Action Copy to F
Info Copy to A, AA, ADA, AG, L, S, W, C, AE/Anderson
A54611
Received in NASA 9-19-77
Response Date NONE
Please Reply for
Signature of
9-19-77

Appendix 5

December 21, 1977, Letter From Dr. Robert Frosch to Dr. Frank Press

Dr Henry

December 21, 1977

Honorable Frank Press
Director
Office of Science and Technology
Policy
Executive Office of the President
Washington, DC 20500

Dear Frank:

In response to your letter of September 14, 1977, regarding NASA's possible role in UFO matters, we are fully prepared at this time to continue responding to public inquiries along the same lines as we have in the past. If some new element of hard evidence is brought to our attention, in the future, it would be entirely appropriate for a NASA laboratory to analyze and report upon an otherwise unexplained organic or inorganic sample; we stand ready to respond to any bona fide physical evidence from credible sources. We intend to leave the door clearly open for such a possibility.

We have given considerable thought to the question of what else the United States might and should do in the area of UFO research. There is an absence of tangible or physical evidence available for thorough laboratory analysis. And because of the absence of such evidence, we have not been able to devise a sound scientific procedure for investigating these phenomena. To proceed on a research task without a disciplinary framework and an exploratory technique in mind would be wasteful and probably unproductive. I do not feel that we could mount a research effort without a better starting point than we have been able to identify thus far. I would therefore propose that NASA take no steps to establish a research activity in this area or to convene a symposium on this subject.

I wish in no way to indicate that NASA has come to any conclusion about these phenomena as such; institutionally, we retain an open mind, a keen sense of scientific curiosity, and a willingness to analyze technical problems within our competence.

Very truly yours,

Robert A. Frosch
Administrator

bcc: A, AD, S-1, L-1, AX, NHS-23
LF/Waggoner, NHS/Lichty

AX-1/D.Williamson,Jr.:djs:12-20-77

Appendix 6

August 17, 1977, Letter From Dr. Richard Henry to Major Ret. Colman S. Von Keviczky

AUG 17 1977

SA(RCH:jb)

Major Ret. Colman S. VonKevicsky, MMSE
Director of ICUFON
35-40 75 Street, Suite 4G
Jackson Heights, NY 11372

Dear Major VonKeviczky:

Dr. Ichtiaque Rasool has asked me to reply to your letter of August 9, 1977.

NASA's Office of Space Science is indeed considering, at the present time, whether to go ahead with a radio search for intelligent extraterrestrial signals.

If there were clear evidence that extraterrestrials were presently in the vicinity of the earth, we would certainly cast our investigation in that direction instead. However, such a clear evidence does not exist. Instead, what exists is a baffling collection of intriguing anecdotal evidence for mysterious phenomena, usually referred to as "UFO's." I have personally followed the UFO phenomenon for many years, as Astrophysics consultant to a major UFO investigation group. I have been disappointed, as the years have gone by, that nothing substantial has emerged from the intensive research efforts of several very competent independent research group. This does not mean that the phenomenon is not real, but it does mean that extracting verifiable information from it is a formidable problem.

The Office of Space Science is charged with exploring the space environment of the earth, and studying the universe. We place first priority on straightforward scientific investigations of the cosmos. Even a radio search for intelligent signals is considered very speculative, and I am sure the we will have our work cut out for us in selling the concept.

I fully recognize that the possibility exists that we are taking the wrong approach. It is a matter of management judgement. I am personally convinced that the radio search is a very worthwhile undertaking.

Yours sincerely,

(original very faint; re-typed May 1988)

Richard C. Henry

Appendix 7

August 9, 1977, Letter From Major Ret. Colman S. Von Keviczky to Dr. Ichtiaque Rasool

• ICUFON •

INTERCONTINENTAL U.F.O. GALACTIC SPACECRAFT - RESEARCH AND ANALYTIC NETWORK®

DIR. OF PROJECT COLMAN VONKEVICZKY, MMSE, MEMBER OF THE AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS (A.I.A.A.)

OFFICE OF THE DIRECTOR OF PROJECT

HEADQUARTERS
35-40 75th STREET, SUITE 4G
JACKSON HEIGHTS, N.Y. 11372
TEL. (212) 672-7948 U.S.A.

August 9, 1977

Dr. Ichtiaque Rasool, Chief Scientist
NASA Office of Space Science
Washington D.C., 20546

Dear Dr. Rasool:

It is my obligation to inform you about our memorandum addressed to the United Nations Secretary General and the member nations' Permanent Representatives regarding the taped messages which will be launched by the Voyager I and II sounds to contact possible extraterrestrial intelligence within the solar system and beyond.

I am sorry to express our firm belief resulted of our 25 years of military, scientific and technological research and their evidences, that the time urge the NASA's scientific community to change their views upon the project SETI and seek rather communication with the exploring galactic forces and their operation authorities, than wasting time and $ billions to search ETI in the depth of the Universe.

Existence of Galactic Powers and their earthbound operation has been officially verified from the year of 1947 by the highest responsible authorities of the US national defense and security: as the Presidents and their Chiefs of Staff. Disposals for armed and retorting confrontation by the strategic defense global emergency are still in effect up to date, which should constitute also a logical explanation of the radio astronomy contact's fiascos,- why are we ignored by the ETI.

In deliberation, that the UFO problem is above all an international security problem, your orthodox scientists should pay serious attention that their wilfull negligence and further habitual polemy on the UFOs, in case of a fatal impact - which is a step from open hostilites - could easily lead not to a "Scientific Watergate" but to a "Nuremberg Trial". Namely the crime against the peace and humanity is qualified as a "supreme war crime" in the Charter of the United Nations, adopted by the General Assembly on February 14, 1946.

Your kind attention to the enclosures would be gratefully appreciated.

Yours respectfully,

Major Ret. Colman S. VonKeviczky, MMSE
Director of ICUFON

Enclosures.

Appendix 8

October 20, 1977, Memorandum, Dr. Richard Henry to Dr. Noel Hinners

NASA

National Aeronautics and
Space Administration

Washington D C
20546

OCT 2 0 1977

Reply to Attn of: SA (RCH:abw)

MEMORANDUM

TO: S/Associate Administrator for Space Science

FROM: SAD/Deputy Director of Astrophysics Programs

SUBJECT: UFO's

I have now seen A's letter of September 6, 1977, to Frank Press, on the subject of UFO's, and I am a bit concerned on a few points. Frosch has agreed to ". . . name a NASA Project Officer to review reports of the last ten years and to provide a specific recommendation relative to any further inquiry by the end of this year." My concern is that the volume of reports for the last ten years is far beyond what even a moderately, well-staffed project at a NASA center could possibly reevaluate between now and the end of the year. For NASA to make a "specific recommendation" on the basis of what could actually be accomplished in that period of time would open NASA to a valid charge of either whitewash or idiocy (depending on which way the recommendation went).

I have a second concern. There is belief among some Americans that the government knows all about UFO's, but that it is all highly classified. I recommend that the NASA Project Officer chosen be given the highest U.S. security clearance, and also be provided with a letter from President Carter establishing his "need to know" regarding unidentified aerial phenomena. If this procedure is not followed, there will be a hole as big as a barn door in any NASA "specific recommendation" that is negative on UFO's.

R C Henry

Richard C. Henry

Appendix 9

October 21, 1977, Memorandum From Dr. Richard C. Henry to Dr. Noel Hinners

NASA
National Aeronautics and Space Administration
Washington, D C 20546

October 21, 1977

Reply to Attn of: SAD(RCH:ap)

MEMORANDUM

TO: S/Associate Administrator for Space Science

FROM: SAD/Deputy Director, Astrophysics Programs

SUBJECT: My Previous Experience in the Study of UFO's

Some weeks ago I was invited to attend, with you, a meeting in Herb Rowe's office to discuss a letter that Dr. Frosch had received from Dr. Frank Press on UFO's. I did not solicit that invitation. Immediately after the meeting, I informed you verbally that I had an interest of long standing in UFO's, and that I was consultant in astrophysics to a leading "amateur" UFO organization. I explained these facts also to my immediate supervisor, Bland Norris.

Yesterday I received a call from Phil Klass of Aviation Week. He asked if I were in charge of UFO's for NASA, and I said that I had not been selected for the task, but that I might well be. He asked if I had any previous association with UFO's, and I detailed it. Klass is the author of "UFO's Explained".

I would like to make explicitly clear to you what my involvement with UFO's has been, and what my views on the subject are:

1. I have been a member of the Aerial Phenomena Research Organization (APRO) for more than ten years, and their consultant on astrophysics for perhaps eight years. APRO is run by Coral and Jim Lorenzen, in Tucson, Arizona. Membership in APRO does not involve acceptance of any particular views on the nature of UFO's, but Coral and Jim most emphatically believe that visitors from other worlds are involved!

As astrophysics consultant, I have performed one task for APRO. I analyzed a supposed "star map" that had been received by radio in some mysterious way. I showed that the "map" was not a map of the region of sky claimed. This was published in the APRO bulletin.

On another occasion, I became suspicious of a sighting reported in the APRO bulletin and showed that the sighting was almost certainly Venus. I wrote to Coral and she published my finding.

2. For the past several years, I have been a member of Alan Hynek's "invisible college" - qualified scientists who feel that the UFO phenomenon deserves attention. Hynek himself is the former Air Force consultant on UFO's. He was a great scoffer, but in recent years he has come to take UFO's very seriously. I have performed no tasks for Alan.

3. My views on UFO's are:

   A. The UFO-report phenomenon exists, is widespread, and is of great interest to a large segment of the American people.

   B. I see no *a priori* reason why some of the UFO reports could not be due to sightings of visitors from other worlds or other dimensions.

   C. I see no overwhelming indication that any UFO report is due to "extraterrestrials".

   D. I confess to occasionally feeling, about UFO's, like the small boy who on Christmas morning found only a pile of horse manure under the tree. Undeterred, he cheerfully dug away, reasoning that there had to be a pony somewhere!

   E. I feel that the Condon investigation did not adequately deal with the UFO phenomenon, and that further government investigation is warranted.

4. In previous "impartial" investigations it has been deemed essential to have, as a leader, a person who has had no significant previous interest or experience in UFO's. The result, in my view, has been

very unsatisfactory: total immersion in UFO's rapidly produces in such people a polarization of opinion one way or the other that compromises the integrity of the investigation. Despite this, the alternative is perhaps even more unsatisfactory.

5. My view 3E above indicates that I already have an opinion on the particular subject that NASA has been asked to investigate.

6. UFO's are (as Phil Klass indicates, in a note to me in the copy of his book, which he kindly sent me) a "tar baby". A scientist who touches the tar baby once, as I have, runs the risk of getting deeper and deeper in goo. I don't have a strong stomach for it, and would prefer to avoid it. But, I also want to make sure that NASA itself does not get badly tarred.

R. C. Henry

Richard C. Henry

Appendix 10

October 31, 1977, Draft Memorandum (by D. Williamson) From Dr. Noel Hinners to Dr. Robert Frosch

D R A F T
X:DWilliamson,Jr.
10-31-77

MEMORANDUM

TO: A/Administrator

FROM: S/Associate Administrator for Space Science

SUBJECT: UFO Study Considerations

Following the recent exchange of correspondence with Frank Press, I have been giving the UFO matter some thought, especially the question of what NASA could reasonably do in both the short and long term.

The environment since the 1969 Condon report seems to have changed:

- There is a widespread interest in UFO's (and in related paranormal phenomena) that cannot be dismissed lightly as involving only a fringe of the population; probably 50% of the United States believes that "something" in the way of persistent phenomena exists or has existed.
- The UN is currently considering a resolution to establish a specialized agency for UFO matters.
- In France, the CNES has been formally charged with setting up a UFO study activity under Claude Poher.
- There are many apparently viable private organizations in the United States with responsible memberships that are following the UFO phenomena from several different view points.
- There seems to have been an increase in reports of the "near encounter" type (Pascagoula, Miss., 1973; Prospect, Ky., 1977) over the last few years.
- There is a general feeling among the UFO organizations at least that the United States Government "knows" far more than it has released, and may even have pieces of UFO hardware in hand.

Open-mindedness about UFO and paranormal phenomena seems to be becoming more "respectable" in the general public. Books and articles flourish. The IEEE is often a forum for matters that would have been rejected out of hand ten years ago. Classified and unclassified research supported by Federal agencies has brushed the UFO community (proponents of "remote viewing" often cross-couple with UFO proponents). At the same time, there are vocal "debunking" groups active on the other side of the issue; the matter seems rather polarized in modern society.

There are two major problems involved in considering any review of the UFO phenomenon by NASA: first, an apparent lack of any tangible or physical evidence available for laboratory analysis; second, the absence of any sound scientific protocol for investigating the phenomenon first-hand. There is a plethora of secondary source material -- human observation and reports thereon -- but hearsay is difficult to deal with scientifically. There are, of course, other problems as well: the probability of hoaxes, the tendency for any investigator to pre-judge, the delicate interface of the Government with any private individual reporting an incident, and the danger of projecting an inaccurate NASA or Administration image. All in all, undertaking a formal study at this time appears fraught with perils.

It appears that NASA has two immediate choices, each with its follow-on implications:

1. We could, on the basis of the situation outlined above and without taking further action, recommend to OSTP that we see no responsible way at this time for the Federal government, and especially NASA, to investigate the UFO phenomenon.

   a. This approach might encourage the vocal pro-UFO groups to continue their charges of cover-up and bureaucratic blindness.

   b. It might avoid fomenting controversy and division within the science community NASA deals with.

c. It would require no change in our current PIO responses to the public.

d. It would divert no resources from those higher priority applications, science, and technology activities which are our legislated charges.

e. It would also be begging the question.

2. We could make a formal request, from my office or Ken Chapman's, to the largest and best-known of the UFO organizations (APRO, NICAP, MUFON, CUFOS, etc.) requesting them to submit their "best" cases to aid us in determining the Government's possible role. We could then compile this material into a usable format, do some first-order checks (probably involving some interviews and data-gathering), and, before drawing our own conclusions, ask for a "peer review"--possibly by the Smithsonian Institution. NASA would then make its own assessment as to whether further research were warranted or not, and if so, in what direction it should proceed. As a minimum, having gone this far and this publicly, NASA should stand ready to investigate new hard evidence that might come in -- this could logically be an added assignment for ARC and MSFC, depending on the physical or biological character of the evidence.

a. This approach commits NASA and the Administration publicly to at least some review of the phenomenon; an eventual negative decision will not satisfy the enthusiasts and a positive one will enrage the non-enthusiasts.

b. It will encourage a great deal of correspondence on both sides of the question; it may lead to a rash of sightings, hoaxes, and/or public excitement.

c. It will place severe demands on the few NASA people involved in the first phase: there will be problems of workload, peer pressure, and pre-judgment.

d. If any follow-through becomes necessary, the resources needed could be quite large -- travel, tests, interviews, and reports.

I recommend that: we proceed with the first phases of Option 2, under a Headquarters team of myself, Chapman, and Williamson: that we take time to tap the private organizations properly and not establish an arbitrary deadline; and that we consider further actions early next year.

Noel W. Hinners

Appendix 12

January 6, 1978, Memorandum From O. B. Lloyd, Jr., to LF-6/Director of Public Affairs

NASA

National Aeronautics and
Space Administration

Washington, D.C.
20546

Ken Chapman
Bill Tanner pouch
good points here.
Comments?
For Review
1/9

Reply to Attn of LFF-3

January 6, 1978

MEMORANDUM

TO: LF-6/Director of Public Affairs

FROM: LFF-3/Chief, Public Services Branch

SUBJECT: Procedure for Receiving Alleged UFO-related "Physical Evidence" for Analysis by NASA

The attached letter from Professor P. A. Sturrock seeking NASA analysis of certain physical evidence concerning anomalous phenomena is probably a prelude to similar communications. Should it be the only such letter, NASA still needs a procedure for receiving, documenting, processing and safegaurding the materials.

It would seem appropriate that before any such material would be received by NASA the sender be required to advise NASA of certain specifics, such as:

- the nature of the evidence
- is this all of the evidence or is this a portion of a larger amount known to exist?
- what is the size, weight of the materials?
- liability - will the government be expected to return the materials in the precise condition they are received?
- what about loss through testing, evaporation or other processes?
- if accepted by the government, would NASA be expected to provide security (such as is now required for lunar samples)?

In the interest of security and documentation it would appear that one point should be designated to receive all evidence. Further, a person with technical expertise should be responsible for:

- o application of policies and procedures, as established by NASA headquarters, in processing evidence at NASA centers
- o selection of the appropriate testing facility or facilities
- o transportation of the evidence from the receiving point to the appropriate NASA facility
- o compiling and forwarding of findings resulting from the analysis
- o return to the sender, or such other disposition as may be determined, of the evidence.

Since the letter to Dr. Press from the Administrator invites submission of bona fide physical UFO evidence, NASA would appear obligated to proceed toward ultimate acceptance of the materials offered by Dr. Sturrock. I would propose he be sent an interim letter outlining the preparatory actions noted above, assure him of the agency's interest in his offer and request such detailed information as noted above.

Meantime, I would suggest bringing together to agree on a procedure representation embracing all aspects of the activity, including scientific, legal, security and Public Affairs. In expectation that there may be submissions from foreign as well as domestic sources, representation should probably be included from International Affairs.

Finally, NASA liaison with other branches of the government should be kept apprised in event there is a development of importance.

If you concur in this general approach, I will prepare an interim response to Professor Sturrock.

O. B. Lloyd, Jr.

Att.

Appendix 11

December 30, 1977, Letter From Dr. Peter Sturrock to Dr. Noel Hinners

INSTITUTE FOR PLASMA RESEARCH
STANFORD UNIVERSITY
VIA CRESPI, STANFORD, CALIFORNIA 94305

December 30, 1977

Dr. Robert A. Frosch
Administrator
National Aeronautics and Space
Administration
Washington, D.C. 20546

Dear Dr. Frosch:

Thank you for your kind letter dated December 22. I have subsequently learned from news articles that you have decided that NASA should not undertake an investigation of the UFO problem. I understand from your letter that a key reason for this decision is the difficulty of conducting a scientific investigation "where the criteria of reproducible or recurrent observations are not available."

The news reports have quoted you as stating that "if some new element of hard evidence is brought to our attention in the future, it would be entirely appropriate for a NASA laboratory to analyze and report upon an otherwise unexplained organic or inorganic sample." As I mentioned in my letter dated December 2, my colleagues and I in the Study Group on Anomalous Phenomena have obtained access to some physical evidence such as films, material samples, etc. The cooperation of NASA laboratories would be most helpful in obtaining meaningful assessments of these items of evidence.

For this reason, I would greatly appreciate your advising me whether, in line with your quoted statement, I may seek photographic, chemical and metallurgical analyses of such samples from NASA laboratories.

Sincerely yours,

P.A. Sturrock
Professor of Space Science
and Astrophysics

PAS/gc

LF
A,ADB,
AX,L
A1460
78-01-03
78-01-17
A

Appendix 13

January 17, 1978, Memorandum From Dr. Richard Henry to Dr. Noel Hinners

JAN 17 1978

SC(RCH:jb)

MEMORANDUM

TO: S-1/Associate Administrator for Space Science

FROM: SC-7/Deputy Director of Astrophysics Division

SUBJECT: UFO Matters

I write this memo in response to your request, of 17 January 1978, that I provide you with a suggested response to Bob Newman's request for suggestions on how to deal with the issues raised by Peter Sturrock's letter on UFO "hard evidence."

Let me move back a few steps and review the whole NASA UFO situation.

Some time ago I gave you by telephone my concurrence on the draft memo that Dave Williamson provided you to use in advising the Administrator concerning a response to Frank Press' request. I have just re-read that draft, and I still think that it is a fine memo. There is only one point in it that I would now (too late!) question, and that is the statement that there is an "absence of any sound scientific protocol for investigating the (UFO) phenomenon first hand." The National Academy of Sciences endorsed the Condon study of UFO's, and specifically endorsed their procedures (protocol), It hardly does for us to say that no sound protocol is possible! I do agree with Dave that a protocol is extraordinarily difficult. The point is, that to be meaningful the protocol must cover the possibility that the UFO phenomenon is due in part to intelligences far beyond our own. I very much doubt that an intellectually inferior species can study an intellectually far superior species if the superior species chooses not to be studied. They could run rings around us!

Be that as it may, the memo offered to Dr. Frosch two suggested options: 1) Try to duck out of it completely, or 2) Do a study. Your recommendation to Dr. Frosch was to follow option two some ways, and review matters early in 1978.

2

Dr. Frosch's letter of 21 December 1977 to Frank Press indicates that he chose, in my judgement, the worst features of each of the two options. We turned down Frank Press before the world; we dismissed UFO's without a study (feature "e" of Option 1); yet!...We started (it seems) a NASA UFO "Hard Evidence" Analysis Program ("UFOHEAP"). Furthermore, UFOHEAP is not a program intellectually directed and given coherence by NASA officials, scientists, and technologists, but rather is a "reaction" program, controlled in key respects by whoever in the world chooses to submit what they consider "hard evidence" to NASA.

What to do?

I suggest that there are three options that are sustainable:

Option 1. Consistent Follow-through. Bill Lloyd's 6 January 1978 memo to Bob Newman covers this option very well--including many things I would not have thought of. The activity should be run out of one Center--a focal point--although the actual analysis would be done at various centers, depending on the type of analysis needed. At the chosen Center there should be one key person in charge of the operation, and he/she must be scientifically/technically sound and politically astute.

In favor of this option:

Consistency

Against this option:

It places NASA in an intolerable position. We have no UFO program and no position on UFO's as such, yet we are the Pope of UFO Evidence. Ravening hordes of bunkers and debunkess will attack every NASA "pronouncement from the chair."

Option 2. Dodge. Interpret "hard evidence" so strictly that no activity results. This would return us, at some additional cost in credibility, to the joys of Dave's original Option 1.

In favor of this option:

All the virtues of the original Option 1.

Against this option:

In addition to the defects of the original Option 1, we violate the apparent spirit of Dr. Frosch's 21 December 1977 letter to Frank Press.

3

Option 3. Bull-by-the-Horns.

Pretend NASA is simply following through on the 21 December letter, but actually mount a modest active (rather than passive) activity. Have NASA run UFO's, not UFO's run NASA. This would be, in effect, deciding to follow the Option 2 that you originally offered to Bob.

In favor of this option:

It faces up to a real national concern, and furthermore it does so in a much more low-key way than if NASA had directly proceeded with the original Option 2.

Against this option:

All the defects of the original Option 2. Also, there is the danger of it appearing that NASA is conducting a "secret" UFO study.

Recommendation

I recommend Option 3. My feeling is that NASA is now stuck to the tar-baby, so lets deal with it properly.

If Option 3 is chosen, there are certain key decisions to be made. My recommendations on these follow. The activity should be run by the Office of Space Science. Additional resources should be provided to you to cover this activity (of course!). Management of the activity should be assigned to the Astrophysics Division, and a Program Scientist/Manager (Frank Martin) should be assigned. The activity should be based at a single Center (GSFC), although of course technical resources of many Centers would be used. A Project Scientist should be appointed. My strong recommendation is that this should be Dr. Stephen Maran of GSFC. He is a skeptic on UFO's; he is extremely sharp and energetic; and he is politically acute.

Dr. Maran should be instructed to take a low-key but positive approach to the UFO problem. He should approach the reputable independent UFO groups (APRO, CUFOS, NICAP, MUFON) and make NASA's technical expertise directly available to them. In addition to this, he should work toward the definition of a coherent larger-scale active UFO program that would deal with the continuing phenomenon in a coherent and intellectually sophisticated manner--this has never been done (to my knowledge!).

Changes would be necessary in the draft PIO UFO material that exists.

4

The Administrator may prefer to choose Option 2 (Dodge!). I wouldn't blame him for this, but if he does, he should do it solidly and consistently. We should not be mushy on UFO's.

Dr. Richard C. Henry

Richard C. Henry

SC/RCHenry:jb:53665:1/17/78

Appendix 14

January 31, 1978, Draft Letter (by Henry) From Dr. Noel Hinners to Dr. Harley Rutledge

Dr. Henry

D R A F T
RCH:jb
1/31/78

Dr. Harley D. Rutledge
Chairman, Physics Dept.
Southeast Missouri State University
Cape Girardeau, MO 63701

Dear Dr. Rutledge:

I am replying to your letter of January 5, 1978, concerning the possibility of NASA support for your work on UFO's.

You have indicated that you are aware of NASA's position on UFO's. In his letter of December 21, 1977, to the President's Science Advisor, Dr. Frosch stated that with regard to UFO's, NASA "retains an open mind, a keen sense of scientific curiosity, and a willingness to analyze technical problems within our competence." He also indicated that NASA does not feel that a research effort could be mounted without "a better starting point than we have been able to identify thus far." Because of this, NASA is taking no steps to establish a research activity in this area. We do "stand ready to respond to any bona fide physical evidence from credible sources."

I gather from the newspaper account which you enclose that you have not yet acquired examples of the type of

"physical evidence" which Dr. Frosch referenced. Thus, I am not in a position to encourage you to submit a proposal.

If you have substantial "non-physical" evidence on specific sightings or encounters, I do suggest that you provide details to Allan Hynek (P. O. Box 11, Northfield, Illinois 60093, Phone 312/491-1870). He has just started a compilation of case reports for the Government of France.

Sincerely,

David Williamson, Jr.
Assistant for Special Projects

SC _____ SC _____
Henry Norris

Original Signed by
SD _____ Noel W. Hinners FEB 9 1978
Stofan Hinners

SCH/RCHenry:jb:53665:1/31/78

Appendix 15

NASA Information Sheet 78-1, "Unidentified Flying Objects"

NASA
National Aeronautics and Space Administration

INFORMATION SHEET

Number 78-1

Prepared by:

LFF-3/Public Services Branch
Office of External Relations
NASA Headquarters
Washington, DC 20546

UNIDENTIFIED FLYING OBJECTS

The information contained here has been compiled to respond to queries on Unidentified Flying Objects directed to the White House as well as NASA.

NASA is the focal point for answering public inquiries to the White House relating to UFOs. NASA is not engaged in a research program involving these phenomena, nor is any other government agency.

BACKGROUND

In July of 1977, Dr. Frank Press, Director of Science and Technology Policy, Executive Office of the President, wrote to Dr. Robert A. Frosch, the NASA Administrator, suggesting NASA should answer all UFO-related mail and also to consider whether NASA should conduct an active research program on UFOs. In a letter dated December 21, 1977, Dr. Frosch agreed that NASA will continue to respond to UFO-related mail as it has in the past and, if a new element of hard evidence that UFOs exist is brought to NASA's attention from a credible source, NASA will analyze the unexplained organic or inorganic sample and report its findings.

Quoting from Dr. Frosch's December 21 letter: "...If some new element of hard evidence is brought to our attention in the future, it would be entirely appropriate for a NASA laboratory to analyze and report upon an otherwise unexplained organic or inorganic sample; we stand ready to respond to any bona fide physical evidence from credible sources. We intend to leave the door clearly open for such a possibility.

"We have given considerable thought to the question of what else the United States might and should do in the area of UFO research. There is an absence of tangible or physical evidence available for thorough laboratory analysis. And, because of the absence of such evidence, we have not been able to devise a sound scientific procedure for investigating these phenomena. To proceed on a research task without a sound disciplinary framework and an exploratory technique in mind would be wasteful and probably unproductive.

"I do not feel that we could mount a research effort without a better starting point than we have been able to identify thus far. I would therefore propose that NASA take no steps to establish research in this area or to convene a symposium on this subject.

"I wish in no way to indicate that NASA has come to any conclusion about these phenomena as such; institutionally, we retain an open mind, a keen sense of scientific curiosity and a willingness to analyze technical problems within our competence."

Reports of unidentified objects entering United States air space are of interest to the military as a regular part of defense surveillance. Beyond that, the U.S. Air Force no longer investigates reports of UFO sightings.

This was not always the case. On December 17, 1969, the Secretary of the Air Force announced the termination of Project Blue Book, the Air Force program for UFO investigation started in 1947.

The decision to discontinue UFO investigations, the USAF said, was based on: (1) an evaluation of a report (often called the Condon Report) prepared by the University of Colorado and entitled "Scientific Study of Unidentified Flying Objects;" (2) a review of the University of Colorado report by the National Academy of Sciences; (3) past UFO studies; and (4) Air Force experience investigating UFO reports for two decades.

As a result of these investigations and studies, and experience gained from investigating UFO reports since 1948, the conclusions of the Air Force were: (1) no UFO reported, investigated, and evaluated by the Air Force has ever given any indication of threat to our national security; (2) there has been no evidence submitted to or discovered by the Air Force that sightings categorized as "unidentified" represent technological developments or principles beyond the range of present day scientific knowledge; and (3) there has been no evidence indicating that sightings categorized as "unidentified" are extraterrestrial vehicles.

With the termination of Project Blue Book, the Air Force regulation establishing and controlling the program for investigating and analyzing UFOs was rescinded. All documentation regarding the former Blue Book investigation has been permanently transferred to the Modern Military Branch, National Archives and Records Service, 8th Street and Pennsylvania Avenue, N.W., Washington, DC 20408, and is available for public review and analysis. Those wishing to review this material may obtain a researcher's permit from the National Archives and Record Service.

Also available:

Scientific Study of Unidentified Flying Objects. Condon Report study conducted by the University of Colorado under contract F44620-76-C-0035. Three volumes, 1,465p. 68 plates. Photoduplicated hard copies of the official report may be ordered for $6 per volume, $18 the set of three, as AD 680:975, AD 680:976, and AD 680:977, from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22151.

Review of University of Colorado Report on Unidentified Flying Objects. Review of report by a panel of the National Academy of Sciences. National Academy of Sciences, 1969, 6p. Photoduplicated hard copies may be ordered for $3 as AD 688:541 from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22151.

NASA is aware of the many UFO reports made in recent years. However, the majority of inquiries to NASA concerning UFO sightings address themselves to the reported sightings by astronauts during Earth orbital and lunar missions and the report by President Carter while serving as Governor of Georgia.

During several space missions NASA astronauts reported phenomena not immediately explainable. However, in every instance NASA satisfied itself that what had been observed was nothing which could be termed abnormal in the space environment. The air-to-ground tapes of all manned missions are available at the Johnson Space Center, Houston, for review by the serious researcher.

On October 12, 1973, while serving as Governor of Georgia, Mr. Carter responded to inquiries from the National Investigations Committee on Aerial Phenomena (NICAP) saying that he had seen a bright, moving object in the sky over Leary, Georgia, in October of 1969. He said the object was visible for 10 to 12 minutes and, at one point, shone as brightly as the Moon. The regional NICAP representative investigated the sighting and reported there was no evidence to support anything beyond placing what Mr. Carter saw in NICAP's "unidentified" category. However, it has been suggested by some students of aerial phenomena that Mr. Carter may have viewed the Planet Venus which, at certain times, may appear many times brighter than a star of the first-mangitude.

Since NASA is not engaged in day-to-day UFO research, it does not review UFO-related articles intended for publication, evaluate UFO-type spacecraft drawings or accept accounts of UFO sightings or applications for employment in the field of aerial phenomena investigation. All such material will be returned with NASA's thanks to the sender.

A number of universities and scientific organizations have considered UFO phenomena during periodic meetings and seminars. In addition, a number of private domestic and foreign groups continue to review UFO sighting reports actively. Some of these organizations are:

(1) National Investigations Committee on Aerial Phenomena
John L. Acuff, Director
Suite 23
3535 University Boulevard, West
Kensington, MD 20795
(301) 949-1267

(2) The Committee for the Scientific Investigation of Claims of the Paranormal
UFO Subcommittee
Robert Sheaffer, Chairman
9805 McMillan Avenue
Silver Spring, MD 20910
(301) 589-8371

(3) Aerial Phenomena Research Organization
James and Coral Lorenzen, Directors
3910 E. Kleindale Road
Tucson, AZ 85712
(602) 793-1825

(4) Mutual UFO Network
Walter H. Andrus, Jr., Director
103 Old Towne Road
Seguin, TX 78155
(512) 379-9216

(5) The Center for UFO Studies
Dr. J. Allen Hynek, Director
924 Chicago Avenue
Evanston, IL 60202
(312) 491-1780

February 1, 1978