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**Space Development
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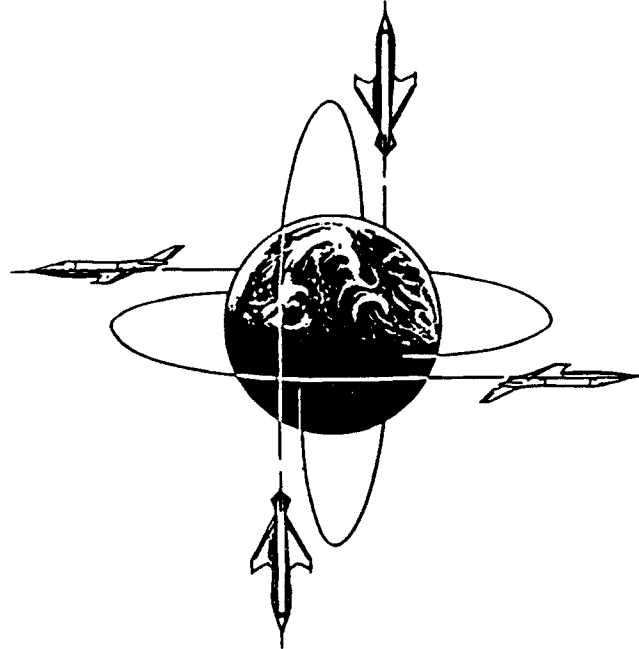
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The National Space Society's
8th Annual 1989 International
SPACE DEVELOPMENT CONFERENCE

Memorial Day Weekend, May 26-29, 1989, in Chicago
Hyatt Regency O'Hare Hotel

Enrollment Limited! Register Early!



**If Ever You Would Attend A
Space Development Conference — This Is The One!**

Highlights include:

APOLLO: 20 YEARS LATER — A 20th anniversary celebration and review of the first Moon landing (with former NASA Administrator **Dr. Thomas O. Paine**).

AN OVERVIEW OF SPACE — A comprehensive update/introduction to all aspects of the space program.

SPACE TECHNOLOGY — Half day programs on (1) Building a Moonbase, and (2) The U.S. Space Station.

BUSINESS AND SPACE — (1) Space & the Non-Space Business; (2) Space Commercialization (2 days of programs).

MEET SPACE LEADERS — Astronauts, NASA officials, space pioneers, experts and advocates. How you can participate in the Space Movement.

SPEAKERS include — Hugh Downs, and astronauts **Mae Jemison** and **William Thornton**.

PLUS SPECIAL SYMPOSIA

Law and Space
Science and Space
Medicine and Space
Teaching and Space
Exploration of Mars

AND MUCH MORE!

**Everything you always wanted to know about Space—
and more! SEE INSIDE FOR DETAILS →**

Tentative Program

Thursday, May 25

Thursday Special Events

Tour: Introduction to Chicago (12-6 pm)
Field Museum, Sears Tower Skydeck,
Downtown, Chicago outdoor art and architec-
ture, Lincoln Park Zoo — \$21

Space Activism / Advocacy

Evening

Outreach: Using Conferences and Other
Separate Events as a Tool for Promoting
Space among Non-Space Groups

Friday, May 26

Friday Special Events

Tour: Fermi National Accelerator
Laboratory (Fermilab)
(7:45 am - 2:00 pm) — \$11
Tour: Chicago's Outdoor Art & Art Institute
(12:30 - 5:30 pm) — \$21
Luncheon: The Future of Free Enterprise in
Space (12:00 - 1:45pm) — \$12
Reception (Cash Bar) — (5:30 - 7:30 pm)
Cafeteria-Style Dinner — (6:30 - 8:30 pm)

Business and Space I —

(Space and the Non-Space Business)

In cooperation with: Illinois Space Institute;
Aerospace Research Applications Center
(ARAC); Peat Marwick Main & Co. — Honorary
Chairman: James A. Lovell, Jr. (Astronaut/Execu-
tive VP, Cental Corp.)

Morning

Locating and Using NASA Technology (Often
Without Cost)

F. Timothy Janis (Director, ARAC); Steve Rid-
dlebaugh (NASA-Lewis)

Coming Space-Related Growth Industries
Spinoffs from Space

Afternoon

Getting into the Space Business: AMROC's
Story

George Koopman (President, AMROC)

Developing Commercial Products through
Defense R & D Contracts

Getting a Piece of the Pie: NASA Contracting
and Subcontracting

Edward Frankel (NASA General Counsel)

Financing

Case Studies

Law and Space

In cooperation with the American Bar Association
Sections on International Law and Science &
Technology. Co-sponsored by the Illinois State
Bar Association and the Federal Bar Association
Space Law Committee

Morning

Overview of Space Law

F. Kenneth Schwejé (Chairman, Aerospace Law
Committee, International Law Section, ABA)

Space Debris: Universal Killer and Legal Mess

Hon. Edward R. Finch, Jr.; F. Kenneth Schwejé

Helping Your Client Locate and Use NASA
Technology (Often without Cost)

F. Timothy Janis (Director, Aerospace Research
Applications Center); Steve Riddlebaugh (NASA-
Lewis)

Afternoon

Helping Your Client Get a Piece of the Pie: Con-
tracting and Subcontracting with NASA
Edward Frankel (NASA General Counsel)

The Legal Road to Private Launching in the
U.S. and Abroad

William Wirin (V.P., Space Commerce Corp.); Lil-
ian Trippett (Counsel, House Committee on
Science, Space & Technology)

Conflicts of Law: the Law In Space

George Sloup

Governing Multi-National Space Habitats

George Robinson (Assoc. Gen. Counsel, Smith-
sonian Institution/Author, "Envoys of Mankind")

Science and Space

Honorary Chairman: John A. Simpson (Prof. of
Physics, U of Chicago)

Morning

Introduction to Fermilab and Argonne

James Lazar (Argonne); Fermilab speaker TBA

NASA's Space Science Program

The Hubble Space Telescope & Other Space
Observatories

Afternoon

Voyager at Neptune: A Preview

Norman Haynes (JPL Voyager Project Director)

Antimatter Propulsion

Robert L. Forward

Space Science in the Chicago Area

Janett Trubatch (Ass't VP for Research, U of
Chicago), Moderator; Dietrich Miller (Prof. of
Physics/Dir., Enrico Fermi Institute, U of
Chicago); Ky Lo (Prof. of Eng., U of Illinois); Mel
Ulmer (Prof. of Physics, Northwestern U)

NASA Pathfinder and Future Projects

Joseph K. Alexander (NASA Assistant Assoc.
Adm'r for Space Science)

Introduction to Spaceflight

All-day professional seminar on essentials of
space navigation. Learn to solve NASA's rendez-
vous workbook problems. [\$195 additional fee].
Gregg Maryniak (Exec. VP, Space Studies In-
stitute); Edward Daley (Pilot)

Teaching and Space

Evening

Welcome

Gordon Lamb (Pres., Northeastern Illinois U)

Teaching about Education and Space

Mervin Strickler (World Aerospace Educ. Org.)

Lunar Rock Teacher Certification

Ralph Winrich (NASA-Lewis)

Make It, Take It

Space M+A+X

An Overview of Space

Evening

Personal Perspectives on Space

Joan Esposito (News anchor, WLS-TV [ABC]
Chicago, and Journalist-in-Space semifinalist);
physician astronaut William Thornton; Nichelle
Nichols (from *Star Trek*); astronaut Eugene
Cernan (the "last man on the Moon")

Science Fiction

Evening

Science Fiction Authors View the Real Space

Program (and Other Matters)

James P. Hogan; Gordon Dickson; Robert L.
Forward; Stanley Schmidt

Space Activism / Advocacy

Morning

NSS Board of Directors Meeting

Open to all NSS members.

Afternoon

NSS Chapters Assembly

Open to all NSS members.

Evening

Introduction to the Space Movement and Space

Development Conferences

NSS Town Meeting

Open to all NSS members.

Saturday, May 27

Saturday Special Events

Tour: Argonne National Laboratory
(7:45 - 2:00 pm) — \$11

Tour: A Day in Chicago

(10 am - 6 pm) Field Museum (or, on your
own, visit nearby Adler Planetarium or Shedd
Aquarium), Downtown, Chicago outdoor art
and architecture, John Hancock Building
skydeck, Water Tower Place shopping cen-
ter on North Michigan Avenue — \$26

Luncheon A

(12:00 - 1:45 pm) Speaker: Physician
Astronaut Dr. William Thornton — \$13

Luncheon B (Including NSS Awards)

(12 - 1:45 pm) Speaker: Shuttle Payload
Specialist/NSS Pres. Charles Walker — \$13

Dinner

(Cash bar: 6:00 - 7:00. Dinner: 7:00 - 8:30)
Speaker: *Star Trek's* Gene Roddenberry
(Member of NSS Board of Governors) — \$17

Moebius Theatre

(Performances at 8:30 and 10:00 pm) Humor
of the Space Age — Pre-conference \$2, est.
\$5 at conference.

Morning

Apollo: 20 Years Later

How the US Did It & Where Do We Go from
Here

Astronaut Eugene Cernan; Thomas O. Paine
(former NASA Administrator and Chairman, National
Commission on Space); Richard MacLeod
(Executive Director, USSF), Moderator

Was It Worth It?

John Logsdon (Director, Space Policy Institute)

Cash Benefits From Space to Date: New NASA
Studies

Henry Clarks (Director, Technology Utilization
Division, NASA)

Medicine and Space

Co-Sponsors: American Medical Association
(AMA); Aerospace Medical Association

Moderator: Dr. Robert H. Moser (VP, Medical Af-
fairs, The NutraSweet Co.); Program Ch.: Dr.
Rufus H. Hessberg (Exec VP, AEMA)

Morning

Overview of Findings to Date on Effects of
Living in Zero G

Dr. Arnauld Nicogossian (Director, Life Sciences
Division, NASA)

CELSS: Controlled Ecological Life Support Systems

Frank B. Salisbury, Ph.D. (Prof. of Plant Physiol-
ogy, Utah State U)

Afternoon

How We Will Handle the Medical Needs of a
Space Station

Dr. James S. Logan (NASA)

Surgery in Orbit

Dr. Bruce Houtchens (Dept. of Surgery, U of
Texas Health Science Center)

Psychological/Sociological Effects of Long Dis-
tance Space Flight

Dr. Harry C. Holloway (Chairman, Dept. of
Psychiatry, USUHS)

Medical Spinoffs from Space

Dr. Nicogossian

Concluding Panel: Where Do We Go from Here?

An Overview of Space

Afternoon

U.S. Manned Space Program
NASA

Voyager at Neptune

Norman Haynes (JPL Voyager Project Director)

Other Nations in Space

The Soviet Space Program

Tentative Program

Saturday, Continued

Space Colonies

Gregg Maryniak (SSI)

Lunar Habitats

Afternoon

Overview

Wendell Mendell (Chief Scientist, Lunar Base Studies, NASA-JSC)

Designs

Peter Land (Illinois Institute of Technology)

Architecture

Larry Bell (NASA-JSC)

Life Support

Faolyn Powell (Life Systems, Inc.)

Surface Operations

John Alred (NASA-JSC)

Lunar Resources

Mark Jacobs (Astronautics Corp.)

Update

Afternoon

Shuttle External Tank Applications

Faye F. Bailif (Senior Engineer/Principal Investigator, ET Orbit Applications, Martin-Marietta)

National Aerospace Plane

David Webb

Launch Companies

Afternoon

American Rocket Company (AMROC)

George Koopman

Third Millennium, Inc.

Dee Ann Davis

Space Services, Inc.

Jim Davidson

Science Fiction

Afternoon

Separate presentations by:

Gordon Dickson; James P. Hogan ("Apollo: What Might Have Been"); Stanley Schmidt ("The Great Race: Astronomers vs. Science Fiction Writers")

Evening

Science Fiction Authors View the Real Space

Program and Other Matters (8:30 pm)

Ben Bova; Hal Clement; Roland Green; Frederik Pohl

Space Activism / Advocacy

Afternoon

"Are You Talking to Me?": How to Publicize and Promote Your Events / How to "Sell" Space

R. Paul Battaglia (VP, Hill & Knowlton, Inc.)

"Raining on the Space Parade" — Unmet Objectives to Space Settlement

Brack Brown (Assoc. Prof. of Government and Politics, George Mason U)

Coordinating Chapters with NSS Headquarters

Douglas Fulmer (NSS Field Coordinator)

"A Bill in Congress is Worth ...": Political Action Workshop

Meet NSS Board of Directors Candidates

Sunday, May 28

An Overview of Space

Morning

U.S. Space Camp/Space Academy

U.S. Unmanned Space Program

NASA

An Integrated Space Plan

Ron Jones (Rockwell International)

Afternoon

Off-Planet Resources for Earth

Building a Lunar Habitat: An Overview

Wendell Mendell (Chief Scientist, Lunar Base Studies, NASA-JSC)

Sunday Special Events

Tour: Museum of Science & Industry and

Crown Space Center

(1-6:30 pm) Includes Omnimax movie — \$15

Luncheon

(12:00 - 1:45 pm) Speaker: Astronaut Mae

Jemison, "From Chicago Schools to Earth

Orbit" — \$12

Awards Banquet

(Reception/Cash bar 6:00 - 7:00, banquet

7:00 - 10:00 pm) Speakers include ABC's

Hugh Downs (Chairman, NSS Board of

Governors) — \$24

NASA: What Needs to be Done

Other Ways Into Space

Space Commercialization

Update

Refitting the Space Shuttle Between Missions

Gene Rocque (NASA-KSC)

Crew Rescue Vehicles

Solar Sails, Crew Transportation & Asteroid

Projects

Robert L. Staehle (Pres., World Space Foundation)

Business and Space II —

(Space Commercialization)

Morning

How Your Business Can Use Space: An Overview

The Private Launch Industry Today

Jeffrey Manber (Executive Director, The Space Foundation)

Afternoon

3M's Space Program

Christopher Chow (Manager, Space Research and Applications Laboratory, 3M)

Small Satellites

Lee Holmes (President, Omnisat, Inc.); Joseph

A. LeBlanc (President, American Microsat, Inc.);

R. Gilbert Moore (Director of Advanced

Programs, Globesat); Gay Canough, Moderator

Photos from Orbit

SPOT Image Corporation

Geostar and SSI: A Case Study

T. Stephen Cheston (Sr. VP, Geostar)

Government Aid to High Tech: An Illinois Case Study

John Straus, Director, Governor's Commission on Science & Technology

International

Soviet Commercial Space Program

William Wirin (V.P., Space Commerce Corp.)

India

Lunar Prospector (Polar Orbiter)

Gay Canough

Japan

Political Organization of the Japanese Space Program

Larry Aronovitch

Future Japanese Applications Satellites

Tanya Sienko

Europe's Columbus Space Station Program

Marianne Dyson

Space Stations

Morning

A Humanized Space Station

Michael Kailil

Space Biosphere II

Mark Nelson (Chairman, Institute of Ecotechnics)

Afternoon

Design Choices (Made and Still to Be Made) in the U.S. Space Station

Thomas L. Moser (Dep. Assoc. Adm'r, NASA);

Dr. Franklin D. Martin (Asst. Adm'r, NASA)

Making MIR & the US Space Station Compatible

Gordon Woodcock (Manager, Future Systems Studies, Advanced Civil Space Systems, Boeing)

Use of Modular Space Structures

Dr. Bruce Houtchens (VP, Texas Health Science Center)

Teaching and Space

Chairman: Margaret R. Lindman (Chairman, Dept. of Curriculum & Instruction, Northeastern Ill. U)

Morning

Partners in Aerospace Education: NASA and Teachers

Robert Brown (Dir., Office of Educ. Affairs, NASA)

Teaching Space: Teaching Tips

Margaret R. Lindman

Afternoon

"Come Fly With Me": Space Curricula

David and Doreen Houseil

Space Science for the Liberal Arts Student

Thomas D. Damon

Museum of Science and Industry: Your Local

NASA Resource Center

Teaching the History of Space Exploration

Michael Morison (U.S. Space Camp)

Science Fiction as a Teaching Tool

Harry "Hal Clement" Stubbs

Space as a "Hook" for Other Subjects

Georgia Franklin

Science Fiction

Afternoon

Separate Presentations By:

Hal Clement; Frederik Pohl ("You'll Never Get to Heaven in a Pentagon Spacecraft"); Roland Green; Ben Bova

Space Activism / Advocacy

Morning

"Uncle NSS Wants You" — Recruitment

Outreach: Working with Schools and Students

Outreach: Working with Other Organizations

National Space Week: Planning for the 20th Anniversary of Apollo 11

Afternoon

"Metastasizing" — How to Start and Spread Chapters

"Write Right!" — The Newsletter: How to Get Your Ideas Circulated

"Reach Out and Touch Someone" — The Space Phone Tree

Meet NSS Board of Directors Candidates

Monday, May 29

Mars

In cooperation with The Planetary Society
Participants: Louis Friedman (Exec. Dir., The Planetary Society); Thomas O. Paine (former NASA Administrator/Chairman, National Commission on Space); John Logsdon (Director, Space Policy Institute); Carl Pilcher (Chief Scientist, NASA Office of Exploration)

General Program

Overview: A Mars Exploration Program

NASA'S Exploration

Psychology/Sociology of Long Distance Space Flight

Dr. Harry C. Holloway (Chairman, Dept. of Psychiatry, USUHS)

Mars Rover Sample Return Scenarios

Soviet Mars '94 Mission

Phobos—The Movie

Technical Track

Mars Airplane

Michael Lambeck & Kenneth Svirer

Mars Balloons

Louis Friedman

Mars Nuclear-Thermal Ascent Vehicle Using Indigenous Fuels for Multiple Takeoffs/Landings

Robert Zubrin (Sr. Engineer, Martin Marietta)

Tentative Program

Monday, Continued

Space Policy

An Integrated Space Plan: A Discussion
Ron Jones (Rockwell International)
Report from Washington
Panel Discussion of Selected Issues

Teaching and Space

"Nergal" (Mars)
Ralph Winrich (NASA-Lewis)
"The Flying Start"
Phil Woodruff (FAA)

"Air Bears": A Primary Grade Curriculum
Jan Draper (IDOT); Ruth Rockcastle (The '99's)
"Salutin' Sir Isaac Newton"
Barbara Koscak
Teaching Space Science
National Science Teachers Association
United States Space Foundation
Richard MacLeod
The Challenger Center: An Introduction
Richard Mathia (Director of Educ. Outreach)
Teaching Astronomy
Adler Planetarium
The Young Astronaut Program for Schools
Ingrid Nowicki

Horizons Unlimited
Joan Elliott (Civil Air Patrol)

Space Activism / Advocacy

Computer Networking
"Beg, Borrow & ...": How to Create Low-Cost
Space Displays
"Aliens, Ogres & BEMs": Using SF Conventions
to Promote Space

Closing Ceremonies

1:00 - 1:30 pm

*All events and speakers
subject to cancellations.*

You, Too, Can Speak!

The *Many Roads to Space* track, which continues throughout the conference, is a forum for you and other registrants to present your special and diverse ideas and experiences about space policy, science, education or technology. If you would like to take this opportunity to speak (generally 15 to 30 minutes), check the box on the registration form, or write the Conference.

MEET NASA OFFICIALS

9-12 SATURDAY NIGHT

Registration Fees

\$70 to April 15. For teachers: \$45 to April 15, \$65 to May 15. \$90 thereafter.

Teaching and Space Symposium 2 Graduate Credits Offered

Northeastern Illinois University — Seminar in Educational Foundations: Aerospace Education / Course No. EFDN 454.

Requirements are: (1) Graduate standing, (2) \$140 tuition, (3) attendance at the Conference, and (4) some additional assignments and activities.

Register at Conference or write for information to:

Dr. Margaret Lindman
Northeastern Illinois University
5500 N. St. Louis
Chicago, IL 60625

Note: You do not have to register for graduate credit to attend the symposium.

American Airlines

Special discount air fares: 45% off coach fares or 5% off any special fare (all restrictions apply), whichever is less. Call 1-800-433-1790; ask for Star File No. S67088.



The Official Conference Airline

Hyatt Hotel Rooms

\$69/night, single or double; \$79/night, triple; \$89/night quad. Call 1-800-228-9000 — room block will be released May 6.

**Space Development
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