

# Donna Shirley Resume

December 2009

## RESUME

**Donna L. Shirley**

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## PRECIS

Donna Shirley, who retired in 2004 as Director of the Science Fiction Museum and Hall of Fame in Seattle, Washington, and is currently President of *Managing Creativity*, is a well-known manager, educator, speaker, consultant and trainer on the management of creative teams. She retired in August 1998 as Manager of the Mars Exploration Program after a 32-year career at NASA's Jet Propulsion Laboratory in Pasadena, California. Prior to becoming manager of the Mars Exploration Program, Ms. Shirley managed the team that built Sojourner, the Microrover, which was landed by the highly successful Mars Pathfinder project on the surface of Mars on July 4, 1997. In 2003 she retired from the University of Oklahoma College of Engineering where she was Assistant Dean and an instructor of Aerospace Mechanical Engineering. Ms. Shirley has an MS in Aerospace Engineering plus over forty years experience in engineering of aerospace and civil systems, including thirty years in management. She has numerous technical and management awards including four honorary Doctorates. She is the author of *Managing Martians*, published in 1998 and 1999, and *Managing Creativity*, available at her web site. She has one daughter, who is in graduate school, and a grandson.

## EMPLOYMENT HISTORY

### Managing Creativity

- 1997-Present: President of Managing Creativity. Providing speaking, consulting and training on the management of creative teams. (See Recent Speeches, below). Have consulted in the areas of management, technology development, and space exploration for a Fortune 100 U.S. company and two international companies, for the National Aeronautics and Space Administration (NASA), for the National Academy of Engineering and for several non-profit organizations. Have provided workshops on the management of creative enterprises to a variety of organizations including British Petroleum, Abbot Laboratories, Welch Allyn, the Project Management Institute, the University of Oklahoma and NASA.
- Consulting and Board service:
  - 2009-Present: Member of Board of Advisors of SEAM Aero, a design and maintenance startup.
  - 2009: Led "Red Team" reviewing and assisting in preparation of proposal for unmanned aerial vehicles.
  - 2008-2009: Member of Search Committee for Director of the School of Aerospace Mechanical Engineering, University of Oklahoma
  - 2007-2009: Instructor in Systems Engineering Course at the University of Oklahoma
  - 2008: Member of AEA Consulting Team, Cleveland, OH.
  - 2007: Member of National Research Council *Committee on NASA's New Frontiers Program*
  - 2007: Head of Search Committee for the Director of the NASA Institute for Advanced Concepts
  - 2005-2006: Member of Mars Exhibit Proposal team for the Chicago Museum of Science and Industry.
  - 2004: Consulting for Passport to Knowledge on "Live From Mars" broadcasts for the Mars Exploration Rover Missions.
  - 2004: Member of National Research Council panel *Committee on National Aerospace Initiative*
  - 2003: Member of Integrated Space Transportation Program Assessment Team – Developed strategies for the future of NASA's space transportation system.
  - 2003-2005: Member of Guidance Council of the Seattle Science Fiction Museum and Hall of

## Donna Shirley Resume

- Fame. Elected Co-Chair of the Council for 2004/6.
- 2003: Expert witness for a major international aerospace corporation, providing space system development information for a lawsuit.
- 2003: Member of Planetary Society's selection panel for the Mars Exploration Rover "Name the Rover" contest;
- 2002: Member of Oklahoma Governor Brad Henry's Transition Team; on the Science and Technology Committee.
- 2002-2003: Member of the Oklahoma Space Industry Development Authority (appointed by Oklahoma Governor) and Chair of the Policy and Education Committee. Dispersed \$250,000 of Federal funds in 10 space education grants to Oklahoma schools and museums through a competitive procurement.
- 2002-Present: Member, Advisory Council for the Planetary Society
- 2002-2007: Chair of the Science Council, NASA Institute for Advanced Concepts
- 2001-2003: Member of the Executive Committee of the Omniplex Science Museum in Oklahoma City, Oklahoma. Participated in successful recruitment of new Museum Director. Participated in strategic planning and in proposals for foundation grant funds.
- 2001-2003: Member of the Board of Trustees, 99's Women's Aviation Museum.
- 2000-2001: Served on National Research Council Task Force on the Usefulness and Availability of NASA's Earth and Space Science Data – wrote Appendix B, *The Data Life Cycle*, of the report, *Assessment of the Usefulness and Availability of NASA's Earth and Space Science Mission Data*;
- 2001: Member, NASA Launch Vehicle Review Board, MAP Mission/Delta II (2001)
- 1998-2001: Co-creator and Official Spokesperson, White House Mars Millennium Project, a nationwide educational project for K-12 students. Project sponsored by NASA, the National Endowment for the Arts, the Department of Education, and the J. Paul Getty Trust. Featured as "news anchor" in 1-hour documentary video *Windows on Mars* that portrays how art and science would complement each other on Mars. Project is continuing as *Imagine Mars*<sup>1</sup>.
- 1998: Authored [Managing Martians](#), an autobiography published by Broadway Books. (Paperback published in 1999), with Danelle Morton.
- 1997: Authored [Managing Creativity](#); published on the Internet at <http://www.managingcreativity.com>

### Science Fiction Museum and Hall of Fame

- January-November 2004: [Director of the nation's only science fiction museum](#), which opened in Seattle, Washington in the summer of 2004. Ms. Shirley managed the construction and implementation of the museum from January 2004 to its opening in June 2004. She then supervised upgrades and improvements to the museum, participated in its education and outreach program, and acted as spokesperson and fundraiser. After retirement she continued to support the museum's public relations and fund development as a consultant.

### University of Oklahoma

September 2002-September 2003: [Instructor of Aerospace Mechanical Engineering \(AME\)](#).

Responsibilities included:

- Taught the Honors Sections of *Introduction to Engineering and Introduction to Computing*, and the technical elective *Managing Creativity*<sup>2</sup>;
- Performed a research project with Tinker Air Force Base to improve their high-level processes;
- Advised the student sections of the American Institute of Aeronautics and Astronautics (AIAA), and the Society of Women Engineers (SWE) and served on two Master's Degree committees;
- Co-creator of a "gateway" course for freshmen women in science, math and engineering. Lectured to this class on career planning,
- Represented AME on the College of Engineering's Multi-Disciplinary Engineering committee and developed Intelligent Systems research plans;

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<sup>1</sup> <http://imaginemars.jpl.nasa.gov/index2.html>

<sup>2</sup> "Managing Creativity: A Creative Engineering Education Approach", presented to the American Society for Engineering Education National Conference, June 2002

## Donna Shirley Resume

- Reviewed Oklahoma's NASA research as a member of the Technical Advisory Committee for Oklahoma's NASA EPSCoR program;
- Created and managed an annual high school summer "academy", the *University of Mars*, with a grant from the Oklahoma State Regents for Higher Education;
- Recruited high-achieving students for the College of Engineering and AME.

September 1999-September 2002: Assistant Dean of Engineering for Advanced Program Development and Adjunct Professor of Aerospace Mechanical Engineering. Accomplishments included:

- Participated in the creation of a strategic plan for the College of Engineering<sup>3</sup>;
- Led the modernization of the Aerospace Engineering curriculum into an "intelligent aerospace systems" program, led the search committee which hired two faculty for this new, multidisciplinary curriculum<sup>4</sup>, and created a new Systems Engineering course for it;
- Initiated and co-chaired a College-wide committee on multidisciplinary engineering<sup>5</sup>;
- Led the admission of the University to the Universities Space Research Association, and acted as the University's representative to the USRA<sup>6</sup>;
- Taught *Managing Creativity* to faculty in short course and seminar formats;
- Participated in the Provost's ad-hoc committee on general education;
- Participated in two Mars Scout proposals for the 2007 NASA Mars missions.

### **Jet Propulsion Laboratory (JPL)**

#### **California Institute of Technology Pasadena, California (1966-1998)**

- 1994-98: Manager of the \$150 million/year Mars Exploration Program, which included the highly successful Pathfinder and Mars Global Surveyor missions plus two additional missions to Mars every 26 months until at least 2005.
  - Pathfinder, the first Discovery mission, landed on Mars on July 4, 1997 demonstrating landing and surface operations capability for an order of magnitude less cost than the 1975-76 Viking mission (\$265 M vs. \$3.6 B in FY92 \$). Pathfinder exceeded its mission requirements and its design lifetime (nearly 3 months vs. 1 month).
  - Mars Global Surveyor (mission cost \$250M, development time less than 3 years) entered orbit in September 1997 and, overcoming a fractured solar panel, successfully demonstrated aerobraking at Mars. Since 1997 it has returned more data than all previous planetary missions combined and continues to perform well years after its specified mission duration. The Mars Exploration Program developed management and operations practices which led to the ability to perform planetary missions for a fraction of the cost of previous missions. Ms. Shirley retired from JPL in August 1998.
- 1992-94: Mars Pathfinder Microrover Flight Experiment Manager. Leader of the team which developed Sojourner Truth, the \$25 million Microrover landed by Mars Pathfinder on July 4, 1997. This was the first partially autonomous rover on another planet (the Lunakhods were teleoperated), the first rover on any solar system body, and the first use (along with Pathfinder) of commercial parts for a planetary mission. Sojourner far exceeded its design lifetime and performance requirements by surviving for nearly 3 months and traveling 100 meters. (Requirements were 1 week and 10 meters).
- 1991-92: Cassini Project Engineer. Chief Engineer of a \$1.6B project to explore Saturn. Project was launched in 1997 is currently in orbit around Saturn collecting unique science data. It successfully dropped the Huygens probe into the atmosphere of Titan in 2004. Ms. Shirley led coordination of science objectives with spacecraft and mission capabilities.
- 1989-93: (Additional Duty) Leader of two NASA-wide, award-winning teams which developed systems engineering and project management processes for the National Aeronautics and Space

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<sup>3</sup> ASEE 2002-367, "Strategic Planning for OU Engineering Education", Donna L. Shirley, Jeffrey H. Harwell, Hillel J. Kumin, presented to the American Society for Engineering Education National Conference, June 2002

<sup>4</sup> Striz, Alfred and Shirley, Donna, "Intelligent Aerospace Systems: An Exercise in Curriculum Development", ASEE Midwest Section Meeting, University of Missouri-Rolla, September 10-12, 2003

<sup>5</sup> <http://coecs.ou.edu/mde/opening.htm>

<sup>6</sup> <http://www.usra.edu/>

## Donna Shirley Resume

### Administration.

- 1975-98: (Additional Duty) Periodically acted as the “Voice” of JPL, providing information to the media for Voyager, Galileo, and the Mars missions.
- 1990-91: Manager of Exploration Initiative Studies. Developed programmatic and technical concepts for an evolutionary Mars exploration strategy.
- 1990-91: (Additional Duty) Member, Space Exploration Synthesis Group. Participated in a multi-agency group developing architectures for the President’s Space Exploration Initiative. Led the development of robotic and driven rover concepts.
- 1989-91: Leader, Surface Transportation Vehicle Systems Engineering and Integration for the Space Exploration Initiative. Worked with the Johnson Space Center to define surface vehicles for human exploration missions. Developed concepts for a Mars Rover Sample Return Mission. Initial development of small micro-rovers - which led to the Pathfinder micro-rover, Sojourner Truth - was under this effort.
- 1987-90: Manager, Rover Concept Team, Mars Rover Sample Return Project. Led development of concepts for automated mobile vehicles for use on planetary surfaces and participated in mission design and trade-off studies.
- 1985-87: Manager, Automation and Robotics Office. Managed JPL's \$5 million/year automation and robotics technology development and demonstration activities. Activities focused on Lunar and Mars Rovers and technology development for the Space Station’s Flight Telerobotic Servicer.
- 1982-85: Manager, Space Station Program Office. Managed JPL’s support of NASA’s initial Space Station design activities. These included mission design and analysis, customer integration, and robotics.
- 1981-82: Manager, Mission Design Section, a line organization of 80 engineers, scientists and programmers designing missions for planetary exploration and earth orbital applications. During this period the primary focus was on the Galileo mission to Jupiter.
- 1979-81: Task Manager. Led teams developing autonomous systems for military spacecraft and studying a mission to Saturn (which later became the Cassini Project).
- 1974-79: Energy and Environmental Systems Manager. Led teams doing systems analysis and planning for a variety of federal and state energy projects. Authored a section of the 1985 National Geothermal Energy Plan.
- 1970-74: Mission Analyst and Mission Engineer for the Mariner 10 mission to Venus and Mercury. Performed the mission analysis which led to the selection of the November 3, 1973 launch date. Managed all mission design and navigation activities provided by the Mission Design Section. Acted as the “Junior Voice” of Mariner 10 narrating the events for the media during flight operations.
- 1968-70: Systems Analyst. Developed requirements for an automated drug identification system. Identified the needs of crime and hospital laboratories across the country and translated them into requirements for number and type of blood and urine samples to be analyzed, and for capital and operating costs.
- 1966-68: Aerodynamicist. Developed mission and system design concepts for planetary atmospheric entry vehicles. Pioneered the analysis of blunt sphere-cone entry bodies for Venus and Mars which led to the successful designs for Viking, Pioneer Venus, Pathfinder and the Mars Exploration Rover missions.

### Previous Experience

- 1963-66: Specification writer and aerodynamicist at McDonnell Aircraft Corporation in St. Louis, Missouri.
- 1961-63: Flight Instructor
- 1954-62: Swimming Instructor and Camp Counselor

### EDUCATION

- Some work in a Ph.D. Program in Human and Organizational Systems - The Fielding Institute, Santa Barbara, CA, 1997-98.
- MS Aerospace Engineering - University of Southern California, Los Angeles, CA, 1968.
- BS Aerospace Mechanical Engineering - University of Oklahoma, Norman, OK, 1965.
- BA Professional Writing - University of Oklahoma, Norman, OK, 1963.

## Donna Shirley Resume

- Extensive continuing education since 1968.

### AWARDS AND HONORS

#### 2009

- Kathryn Wright Award for the National Aerospace Association and the 99's women pilot's association, Chicago, IL

#### 2004

- Honorary Doctorate, Susquehanna University, Selinsgrove, PA

#### 2003

- Installed in the Oklahoma Women's Hall of Fame

#### 2002

- Oklahoma Byliners Award, Women in Communication

#### 2001

- PICMET (Portland International Conference on Management in Engineering and Technology) Leadership in Technology Management Award for the Government Sector
- National Space Society Wernher von Braun Award

#### 2000

- Western Engineer's Society Washington Award for Engineering Achievement

#### 1999

- Women's Policy, Inc (formerly Women's Congressional Caucus) "A Century of Progress for Women" Award
- Los Angeles YWCA Leadership Award

#### 1998

- Honorary Doctorates:
  - University of Oklahoma
  - Mt. St. Mary's College, Los Angeles, California
  - State University of New York, Rome/Utica
- American Society of Mechanical Engineers, Holley Medal for Lifetime Achievement
- Inducted into Oklahoma Aviation and Space Hall of Fame
- Asteroid "5649donna-shirley" named by its discoverer, Eleanor Helin
- Society for Technical Communication President's Award
- American Academy of Achievement Golden Plate Award
- Women in Technology International Most Valuable Player Award
- National Space Society Wernher von Braun Award

#### 1997

- Senior Fellow, University of California-Los Angeles, School of Public Policy
- *Glamour* Magazine "Women Who Do and Dare" Award
- One of *MS* Magazine's "Women of the Year"
- NASA Outstanding Leadership Medal for management and systems engineering
- NASA Group Achievement Award, Pathfinder Mars Rover Development Team
- Society of Women Engineers Judith Resnick Award,
- Inducted into Women in Technology International Hall of Fame

#### 1961-96

- JPL Outstanding Mentor Award, 1996
- NASA Group Achievement Award, Program/Project Management Summer Study, 1991 (Accepted award for group)

## Donna Shirley Resume

- NASA Group Achievement Award, Telerobotics Technology Team, 1991
- NASA Group Achievement Award, Space Station Task Force, 1985
- NASA Group Achievement Award, Mariner Venus/Mercury 1973 Mission Sequence Working Group, 1974
- "Outstanding Young Women of America", 1971.
- "Outstanding Senior", Gamma Phi Beta Sorority, University of Oklahoma, 1962
- Sigma Gamma Tau, Aerospace Engineering Honorary Society, University of Oklahoma, 1961
- "Tassels", Junior Women's Honorary Society, University of Oklahoma, 1961

### MEMBERSHIPS AND OFFICES

- Member of the National Research Council Committee to Review New Opportunities in Solar System Exploration
- Co-chair of Advisory Council for the Seattle Science Fiction Museum and Hall of Fame (2003-Present)
- Member and Chair of the Science Council for the NASA Institute of Advanced Concepts (2002-present) (Chair: 2004-2007)
- Member of the Executive Committee of the Omniplex Science Museum in Oklahoma City, Oklahoma (2001-2003)
- Member of the Oklahoma Academy (2001-2003)
- Member of the Oklahoma Space Industry Development Authority (appointed by Oklahoma Governor) and Chair of the Policy and Education Committee (2000-2003)
- Member of the Board of Advisors, College of Engineering, University of Oklahoma (1998-1999 and 2003-present)
- Member of Advisory Committee, School of Aerospace Mechanical Engineering, University of Oklahoma (1998-Present)
- Member of the Board of Trustees, 99's Women's Aviation Museum (2001-2003)
- Trustee of Scripps College for Women, Claremont, California (1999)
- Scripps Association of Families, 1995-99 (Funds Chair, Communications Chair, and Association Chair)
- Chair of the New Millennium Committee of the Planetary Society, (1998-Present)
- Member of Advisory Council, The Planetary Society, (1997-2001)
- Member of the Board, Women In Technology International, (1997-1998)
- Member of Advisory Council, Aerospace Engineering Department, Georgia Institute of Technology, (1997-1999)
- Associate Fellow, American Institute of Aeronautics and Astronautics (AIAA), (1997-Present)
- Senior Member Society of Women Engineers (1992-1993)
- Senior Member, AIAA (1991-1996)
- Member, Project Development Committee, JPL Child Educational Center, Pasadena, Ca, (1990-1999)
- Ex Officio Member - Solar System Exploration Subcommittee (SSES) which advised NASA's Director of Solar System Exploration, (1995)
- President, Caltech Management Association, (1993-1994)
- Member, NASA Earth Observing System Non-Advocacy Review Board, (1989)
- Member, Advanced Technology Advisory Committee (ATAC), reporting to Congress on NASA application of Automation and Robotics to Space Station, (1985-1987)
- Member, Board of Directors, Caltech/JPL Child Education Center, (1981-82)
- Life member, Sierra Club, Completed Sierra Club Basic Mountaineering Training Course
- Member, League of Women Voters
- Member, Nature Conservancy
- Member, Earthwatch
- Member, Seattle Town Hall

**SECURITY CLEARANCES:** Top Secret 1981-82

## Donna Shirley Resume

### PUBLICATIONS

- AIAA-2004-5963, Shirley, D.L., Howle, L. and Lester, H., “A New Science Fiction Museum: Exciting Young People About Science and Engineering”, presented at AIAA Space 2004 Conference, San Diego, CA, September 28, 2004
- Testimony by Donna Shirley to The House Committee on Science Hearing entitled *Perspectives on the President's Vision for Space Exploration*, March 10, 2004
- Striz, Alfred and Shirley, Donna, “Intelligent Aerospace Systems: An Exercise in Curriculum Development”, ASEE Midwest Section Meeting, University of Missouri-Rolla, September 10-12, 2003
- Horvath, J., Chao, C., Kitts, C., Patterson, J., Phillips, R., Ridenoure, R., Shirley, D., and Stewart, R., "Global Space League Upcoming Ride-Along Opportunities." 17th Annual AIAA/USU Conference on Small Satellites, Logan, UT August 2003.
- D.P. Miller, D. Hougen & D. Shirley, “The Sooner Lunar Schooner: Lunar Engineering Education”, *Journal of Advances in Space Research*, vol. 31/11, pp. 2449-2454, 2003.
- Shirley, Donna; Baker, Ray; Deaton, Laura and Reynolds, Ed, “Tinker Air Force Base Phase I Process Improvement Methodology Report”, 31 May 2003
- FIE 2002 1164, “A Laptop College of Engineering at the University of Oklahoma”, Donna L. Shirley, Catherine L. Pierson, Deborah A. Trytten, Teri Reed Rhoads, and Mary A. Court, Presented at the IEEE Frontiers in Education Conference, Boston, MA, 6-9 November 2002
- IAF-02-Q.4.1.01, “The Mariner 10 Mission to Venus and Mercury”, Donna L. Shirley, invited paper, presented at the 2002 World Space Congress, 16 October 2002
- IAF-B0.3-F3.3-0031-02, “Sooner Lunar Schooner: Lunar Engineering Education”, David P. Miller, Dean Hougen, Donna L. Shirley, presented at the 2002 World Space Congress, 17 October 2002
- ASEE 2002-367, “Strategic Planning for OU Engineering Education”, Donna L. Shirley; Jeffrey H. Harwell; Hillel J. Kumin; presented to the American Society for Engineering Education National Conference, June 2002
- ASEE 2002-406, “Managing Creativity: A Creative Engineering Education Approach”, Donna L. Shirley, presented to the American Society for Engineering Education National Conference, June 2002
- Shirley, Donna L., “The Myths of Mars: Why We’re Not There Yet, and How to Get There”. Workshop on Concepts and Approaches for Mars Exploration, Lunar and Planetary Institute, Houston, TX, 18-20 July 2000
- Shirley, Donna L, Written Congressional testimony on “The Root Causes of the Mars Surveyor 98 Mission Failures”, requested by the staff for the House Subcommittee on Science and Technology and used in hearings on 30 April 2000.
- Shirley, Donna L. “Women in Engineering: Focus on Success”, *Bridge*, National Academy of Engineering, summer 1999.
- Shirley, Donna L, Managing Martians - Autobiography published by Broadway Books, with Danelle Morton, 1998, 1999.
- Shirley, Donna L., “Touching Mars”, Presented at the IAA Low Cost Systems Conference, Pasadena, CA, August 1998
- Shirley, Donna L, Managing Creativity: A Practical Guide to Inventing, Developing and Producing Innovative Products, published at <http://www.managingcreativity.com>, 1997.
- Shirley, Donna L. and Matijevic, Jacob, “Mars Rovers: Past, Present and Future”, Princeton University Space Studies Institute's 20th Anniversary Conference, Princeton, NJ, 10 May 1997
- Matijevic, Jacob, et al, “The Pathfinder Microrover”, (By The Rover Team), *Journal of Geophysical Research*, Vol. 102, No. E2, Pages 3989-4001, February 25, 1997
- Shirley, Donna L, “Rovers in the U.S. Mars Exploration Program”, 1997 International Conference on Mobile Planetary Robots and Rover Roundup, Santa Monica, CA, 29 January - 1 February 1997
- Shirley, Donna L. and Haynes, Norman, “The Mars Exploration Program”, Space Technology and Applications International Forum (STAIF-97), Albuquerque, NM, 26-30 January 1997.
- Matijevic, J and Shirley, Donna L., “The Mission and Operation of the Mars Pathfinder Microrover”, 13th World Conference, International Federation of Automatic Control, San Francisco, Ca, 30 June - 5 July 1996
- IAA-L-0402, “Mars on \$300K A Day: The Mars Exploration Program”, Donna L. Shirley, second IAA International Conference on Low-Cost Planetary Missions, Laurel, Maryland, 16-19 April 1996
- AIAA 96-0333, “Mars Exploration Program Strategy: 1995-2020”, Donna L. Shirley and Daniel J. McCleese, 34th Aerospace Sciences Meeting and Exhibit, Reno, Nv, 15-18 January 1996

## Donna Shirley Resume

- Matijevic, J.R. and Shirley, Donna L., "Mars Pathfinder Microrover", *Autonomous Robots*, 2, 283-289 (1995).
- Shirley, Donna L and Crisp, David, "Mars Pathfinder Microrover Flight Experiment: A Status Report", Presented by Dr. David Crisp at the 2nd Annual International Planetary Rover Symposium, Moscow, Russia, 15-21 May 1994
- IAA-L-0506, "Mars Pathfinder Microrover Flight Experiment - A Paradigm for Very Low Cost Spacecraft", Donna L. Shirley, IAA Low Cost Solar System Exploration Conference, Laurel, Md., 13-15 April 1994
- Shirley, Donna L., Wilcox, Brian, and Eisen, Howard, "The History and Future of Computer Vision in Planetary Surface Exploration", Workshop on Computer Vision for Space Applications, Antibes, France, 20-24 September 1993.
- IAF-93-Q.3.396, Varsi, G. and Shirley, Donna L, "Mars Microrover for MESUR Pathfinder", presented at the 44th Congress of the International Astronautical Federation, Oct 16-22, 1993, Graz, Austria.
- Shirley, Donna L., "Finding the Path to a Better Mars Rover", *Aerospace America*, pp 12, September 1993.
- Shirley, Donna L, "MESUR Pathfinder Microrover Flight Experiment: A Status Report", Case for Mars V, Boulder, CO, 26-29 May 1993
- Pivrotto, Donna Shirley, "The NASA Systems Engineering Training Program", National Council on Systems Engineering (NCOSE) 1st Annual Conference, Chattanooga, TN, 20-23 October 1991.
- Pivrotto, Donna Shirley and Cunningham, Glenn, "Robotic Missions to Mars: Paving the Way for Humans", International Astronautical Federation Congress, Dresden, East Germany, 6-13 October 1990. (One of ten NASA participants).
- Pivrotto, Donna Shirley and Burke, James D., "Lunar Rover Development at JPL", presented at the International Astronautical Federation Congress in Dresden, East Germany, 6-13 October 1990.
- AIAA 90-3820, "Lunar Surface Vehicle Evolution: FY89-90 NASA Studies", Pivrotto, Donna Shirley and Connolly, John, presented at the AIAA Space Programs and Technologies Conference and Exhibit, Huntsville, Alabama, 25-27 September 1990.
- AIAA 90-3785, "Site Characterization Rover Missions", Pivrotto, Donna Shirley, presented at the AIAA Space Programs and Technologies Conference and Exhibit, Huntsville, Alabama, 25-27 September 1990.
- Pivrotto, Donna Shirley, "A Goal and Strategy for Human Exploration of the Moon and Mars", *Journal of Space Policy*, Volume 6, Number 3, August 1990.
- Pivrotto, Donna Shirley, "A Goal and Strategy for Human Exploration of the Moon and Mars: Part Two", Case for Mars IV, Boulder, CO, 4-8 June 1990
- Pivrotto, Donna Shirley, "The Impact of Mars Surface Characteristics on Rover Design", Presented at the International Mars Environment Workshop, 22-26 January 22-26, 1990, Sopron, Hungary
- Pivrotto, Donna Shirley, "Rovers on Mars", Videotape shown at the IEEE International Workshop on Intelligent Robots and Systems '89, Tsukuba, Japan, 4-6 September, 1989.
- Pivrotto, Donna Shirley and Dias, W.C., "United States Planetary Rover Status - 1989", presented at the 2nd AIAA/JPL International Conference on Solar System Exploration, Pasadena, California, 22-24 August, 1989, also JPL Publication 90-6, 15 May 1990.
- Pivrotto, Donna Shirley, "Mariner 10", *Magill's Survey of Science - Space Exploration Series*, Vol 2, pg 871-877, Edited by Frank Magill, Salem Press, Pasadena, Ca, 1989
- AIAA-89-0419 "Mars Rover 1988 Concepts", Pivrotto, Donna Shirley, Dias, William, and Penn, Thomas, 27th Aerospace Sciences Meeting, Reno, Nevada, 9-12 January, 1989.
- IAF-87-24 "NASA's Telerobotics R&D Program: Status and Future Directions", Pivrotto, Donna Shirley and Varsi, Giulio, IAF 38th International Astronautical Congress, Brighton, U.K., October 10-17, 1987.
- Pivrotto, Donna Shirley, and Willshire, Kelli, "Automation and Robotics for Space Station in the 21st Century", presented at the AIAA Space Station in the 21st Century Conference, Reno, Nevada, 3-5 September 1986.
- Pivrotto, Donna Shirley, "Unmanned Vehicle Systems", presented at the 13th Annual Symposium, Association of Unmanned Vehicle Systems, 21-25 July 1986.
- Pivrotto, Donna Shirley, "A Customer-Friendly Space Station", presented at the International Astronautical Federation 35th Congress, Lausanne, Switzerland, 11 October 1984.

## Donna Shirley Resume

- Pivirotto, Donna Shirley and Schenker, Paul S., "Space Station as a Focus for Telerobotics", presented at the AIAA Space Systems conference, San Diego, California, June 10, 1984.
- Pivirotto, Donna Shirley, "People and Machines as partners in Space: A Report on Space Station Autonomy", American Society of Mechanical Engineers (ASME) Unmanned Autonomous Vehicles Conference, Stanford University, 28 June 28 1983.
- USAF Report SD-TR-81-87/JPL Report 7030-2, "Assessment of Autonomous Options for the DSCS III Satellite System" (3 Volumes), Pivirotto, Donna Shirley, Editor, 6 August 1981.
- JPL Document 174-111 "Analysis of Deep Space Information Systems: System Modeling Concept", Beswick, C.L., Pivirotto, Donna Shirley, et al, 16 February 1981.
- AIAA 81-0310, "Saturn Orbiter with Dual Probes Mission: A Progress Report", Pivirotto, Donna Shirley, presented at the 19th Aerospace Sciences Meeting, St. Louis, Missouri, January 12-15, 1981.
- JPL Document No. 5010-23, "Fossil Energy Systems Analysis and Engineering", Pivirotto, Donna Shirley, et al, August 1979.
- JPL Publication No. 78-33, "Process Heat in California: Applications and Potential for Solar Energy in the Industrial, Agricultural and Commercial Sector", Shirley, Donna L. and Barbieri, Rosalind, et al, March 1978.
- Shirley, Donna L. and Barbieri, Rosalind, "Opportunities for Solar Energy in California Industry, Commerce, and Agriculture", Miami International Conference on Alternative Energy Sources, 5-7 December 1977.
- Shirley, Donna L., "Policies for Stimulating Electric Utility Investment in Geothermal Energy", 2nd International Congress on Technology Assessment, Ann Arbor, MI, October 1976.
- Shirley, Donna L., NASA TM 33-734, Volume I, "Mariner Venus-Mercury 1973 Project Final Report, Venus and Mercury Encounters, Section VII-B", September 1976.
- Shirley, Donna L., "Electric Utility Companies and Geothermal Power", 11th Intersociety Energy Conversion Engineering Conference, State Line, NV, September 12, 1976
- O'Toole, R.P., Shirley, Donna L., et al, JPL Engineering Memorandum 393-276, "Institutional Aspects of On-Site, Solar-Electric Power Generation", October 1975.
- Shirley, Donna L., et al, "Appendix E: Electric Utilities", JPL Final Report 5040-6, Volume III, Appendices, "Program Definition for the Development of Geothermal Energy", August 29, 1975.
- AIAA 75-53, "MVM '73 Mission Analysis: Application of a Black Art", Donna L. Shirley, presented at the AIAA 13th Annual Aerospace Sciences Meeting, January 1975.
- Howard, H.T., et al, "The Mariner 10 Venus Encounter Radio Science Experiment", *Science*, 183, 1297 (1974).
- AIAA 72-942, "Mariner Venus-Mercury Encounter Strategy", Donna L. Shirley, presented at the AIAA/AAS Astrodynamics Conference, Palo Alto, California, September 1972.
- MVM '73 PD 615-49 "Mission Requirements and Constraints Document", Donna L. Shirley, June 2, 1972.
- Shirley, Donna L., "An Approach to Automated Drug Identification", *Journal of Forensic Sciences*, July 1971. Also presented at the 23rd annual meeting of the American Academy of Forensic Sciences, Phoenix, Arizona.
- AIAA 71-532, "Automated Drug Identification for Urban Hospitals", Donna L. Shirley, AIAA Urban Technology Conference, New York, New York, May 1971.
- Shirley, Donna L. and Misselhorn, John, "Instability of High-Drag Planetary Entry Vehicles at Subsonic Speeds", JPL SPS 37-50, February 1-March 31, 1968; *AIAA Journal of Spacecraft and Rockets*, October 1968; presented at the Dynamic Stability Workshop, NASA Ames Research Center, Moffett Field, California, November 1968.
- McDonnell Aircraft Corporation, Trade-Off Study Report, Voyager TSR 1.5, "Sphere-Cone Entry Body Shape Optimization", May 1966.
- McDonnell Aircraft Corporation Trade-Off Study Report, Voyager TSR 1.4, "Optimization of Hyperbolic Energy Trajectories into the Martian Atmosphere", September 1965.

### SELECTED MEDIA APPEARANCES

- Numerous median appearances around the opening and progress of the Science Fiction Museum and Hall of Fame, June 28, 2004 and continuing.

## Donna Shirley Resume

- Appeared on the Diane Rehm Show and Warren Olney's "To the Point" on National Public Radio, and the Jim Lehrer News Hour, PBS, concerning the shuttle *Columbia* disaster (February/March 2003)
- Featured in half hour segment (SHOW #105: Donna Shirley SPACE TECHNOLOGY) of Masters of Technology series on public television, sponsored by Scientific American (<http://www.sciam.com/mastertech/>), (2002)
- Numerous television and newspaper interviews on current and future NASA flight projects (1973-present)
- Numerous lectures to school and public audiences on NASA deep space program and engineering careers (1965-present).
- Technical advisor on National Academy of Science television series, "Space Age", shown in 1992 on public television.
- Featured in numerous educational videotapes, e.g.
  - "Windows on Mars", Red Horse Productions, sponsored by the National Endowment for the Arts, 1999
  - "Live From Mars", Passport to Knowledge, for NASA Educational Television, 1997
  - "Addison-Wesley Secondary Math Project", 1996
  - "NASA On the Cutting Edge: Robotics Program" for NASA Educational Television, 1995
  - NASA Videoconference, "Lasers", 1995
  - "Making Scientific Concepts Come Alive" for Mindworks, a National Science Foundation Project, 1995
  - "Building a Rover", FASE Productions, 1992
- Recent (1996-2004) Television Appearances include: ABC's *World News Tonight*, ABC's *Good Morning America*, NBC's *Today*, many CNN news programs, the Discovery Channel's *Life on Mars?*, PBS's *Jim Lehrer News Hour*, The Family Channel's *To the Moon and Mars*, *LA Life and Times* on KCET public television, *Charley Rose*, *Tom Snyder*, CSPAN, documentaries by PBS, the BBC, and Australian television, and numerous other national, international and local television news programs
- Numerous national and international radio appearances including local and national commercial and educational networks and PBS.
- Print and Electronic Media: Widely quoted and featured in 1995-2000 on planetary exploration, including the *New York Times*, the *Chicago Tribune*, the *Washington Post*, the *Los Angeles Times*, *Florida Today*, *New Scientist*, the *Houston Chronicle*, the *Christian Science Monitor*, the *Dallas Morning News*, and the *Daily Oklahoman*; plus *Newsday*, *Time*, *Newsweek*, *Mirabella*, *Glamour*, *Ms.*, *Buzz* and *Wired* magazines; "Reinventing Government" report by Vice President Al Gore; plus numerous international magazines and newspapers and Internet news sites.
- Numerous Internet web chats on Mars exploration and women in technical fields.

### SELECTED SPEECHES AND PUBLIC APPEARANCES

#### 2009

- Ninety Nines International Conference, *Ninety Nines Experience*, Chicago, IL (Also Received the Katherine B Wright Award from the National Aeronautic Association)

#### 2008

- New Mexico Society of Professional Engineers, *Mars Exploration*, Albuquerque, NM
- Seattle Special Libraries Association Science Fiction Event, *Science Fiction in Education*, Seattle, WA
- UC Davis Graduate School of Management, *Managing Creativity*, Davis, CA

#### 2007

- California Charter Schools Association, *Managing Creativity in Charter Schools*, San Diego, CA
- Purdue University, *Multidisciplinary Engineering*, Lafayette, Indiana

#### 2006

- American Breakfast Club *Managing Creativity* speeches in Tampa and Orlando, FL
- BP Management Seminar, *Managing Creativity*, Houston, Tx

## Donna Shirley Resume

### 2005

- Keynote banquet speech, *Managing Creativity*, STAIF Conference, Albuquerque, NM
- Pennsylvania State University, *Mars Exploration*, Altoona PA
- Bay Path College Women's Symposium, *Bending the Glass Ceiling*, Springfield, PA
- PINC International Creativity Conference, *Managing Creativity*, Zeist, The Netherlands
- American Society of Military Comptrollers, *Managing Creativity*, Salt Lake City, UT
- Tampa Breakfast Club, *Managing Creativity*, Tampa, FL
- Missouri Southwestern University, *Bending the Glass Ceiling*, St. Joseph, MO

### 2004

- Oklahoma Press Association, *Managing Creativity* Workshop, Oklahoma City, OK
- Presentations on Science Fiction Museum and Hall of Fame to Seattle Girl's School, Seattle Mensa Chapter, Norwescon Science Fiction Convention,
- IEEE Regional Conference, *Managing Creativity*, Norman, OK
- Commencement Speech, Susquehanna University, Selinsgrove, PA
- *Use of Tethers for Space Exploration*, Presentation to Space Elevator Workshop, Washington, DC
- Presentations at Campbell Conference: *Mars Exploration and Science Fiction*, and *The Science Fiction Museum and Hall of Fame*
- Presentation of Science Fiction Museum education program at AIAA Conference, San Diego, CA

### 2003

- Oklahoma Women's Hall of Fame Acceptance speech, *The Importance of Technology to Oklahoma*
- Tinker Air Force Base Technology Expo, Keynote on *Managing Creativity for Aircraft Maintenance and Logistics*

### 2002

- The *Diane Rehm Show*, National Public Radio, Diversity discussion,
- California League of Middle Schools, *Educational Technology*, Monterey, CA
- IPC Association Connecting Electronics Industries, *Managing Martians*, San Diego, CA
- Women In Communication Byliners Award, Acceptance Speech, Oklahoma City, OK
- National Collegiate Inventors and Innovators Alliance, *Managing Creativity* Workshop, Washington, D.C.
- International Association of Food Industry Suppliers, *Managing Creativity in the Food Industry*, San Diego, CA
- University of Nebraska Business/Corporate Community Chancellor's Dinner Speech and Breakfast Keynote, Omaha, NE
- Advertising Photo Shoot for Iona.com, Seattle, WA
- Oklahoma Symposium, Quartz Mountain, OK
- Rose Hulman College, *Managing Martians* Terre Haute, IN
- Leadership Oklahoma City, *Omniplex Science Museum*, Oklahoma City, OK
- Space Day Webcast, *Mars Exploration*, National Air and Space Museum, Washington, D.C.
- Oklahoma City Community Foundation, *Space in Oklahoma*, Oklahoma City, OK
- American Council of Engineering Companies, *Managing Creativity*, Las Vegas, NV
- Carl Albert Center, University of Oklahoma, Workshop on *The Why, What and How of Creative Leadership*, Norman, OK
- *Managing Creativity* Intersession Course, University of Oklahoma, Norman, OK
- *Managing Creativity* Workshop for faculty and staff, University of Oklahoma, Norman, OK
- NASA Institute for Advanced Concepts Annual Meeting Keynote Speech, *The Myths of Mars*, Houston, TX
- American Society of Engineering Educators, Presented two papers on Engineering Education, Montreal, Quebec, Canada
- *The University of Mars*, Three week High School Summer Academy, University of Oklahoma, Norman, OK
- Judge National Botball Finals (Robotic Competition for middle and high school students) and speech on *Mars Exploration*, Norman, OK

## Donna Shirley Resume

- Global Space Endeavours and 100th Year Anniversary Event, *The Pathfinder Mission*, Frederick, OK
- Glaxo Smith Kline Annual Sales Meeting, *Managing Creativity in the Pharmaceutical Industry*, Kansas City, MO
- International Astronautical Federation World Space Congress, Invited Speech on *Mariner 10 Mission to Venus and Mercury*, Houston, TX
- Science Teachers Association of Texas Annual CAST 2002 Convention Keynote, *Managing Creativity in Education*, El Paso, TX
- Keynote speech, 2002 Council for Advancement and Support of Education (CASE) District VII Conference, *Managing Educational Creativity*, Anaheim, CA

### 2001

- Appearance on NBC's "Today" show with Matt Lauer, *Technology in the Next Millennium*, New York, NY
- Oklahoma Aviation and Space Hall of Fame, Introduction of Honoree General Jerry D. Holmes, Oklahoma City, OK
- Lectures to The Planetary Society Antarctic Cruise Group, *Planetary Exploration*, South America and Antarctica
- Southern Methodist University Women's Conference, *Bending the Glass Ceiling*, Dallas, TX
- Seattle YWCA Professional Women's Benefit Luncheon, *Managing Creativity*, Bellevue, WA
- American Academy of Achievement, *The Importance of Diversity*, San Antonio, TX
- Managing Creativity, 3 credit hour course, University of Oklahoma, Norman,
- National Space Society Convention, Receive Wernher Von Braun Award and Book Signing, Albuquerque, NM
- EDA Consortium Conference, Keynote Speech, *Managing Creativity in the Electronics Industry*, Las Vegas, NV
- NRO/AIAA Launch Vehicle Symposium Banquet Speech, *Managing Creativity in Launch Vehicle Procurement and Development*, Chantilly, VA
- Portland International Conference on Managing Engineering Technology (PICMET), *Management of Engineering Technology*, Portland, OR
- Jet Propulsion Laboratory History Series, *The Perils of Pauline: The Mariner 10 Mission*, Pasadena, CA
- American Consulting Engineers Council, *Managing Creativity*, Orlando, FL
- Oklahoma Symposium, Panelist, Quartz Mountain, OK
- Association for Manufacturing Excellence Speech, *Managing Creativity in Manufacturing*, Research Triangle Park, NC
- National School Boards Association General Session, *Managing Creativity in Education*, Atlanta, GA
- National Science Foundation Management Symposium, *The Joys and Sorrows of R&D*, Tampa, FL
- Massachusetts Institute of Technology "Think Mars" Conference, *The Mars Millennium Project: Educating Martians*, Cambridge, MA
- Walt Disney World College Education Program, *Managing Martians*, Orlando, FL

### 2000

- Innovation Conference Speech and Managing Creativity Workshop, Scottsdale, AZ
- Western Society of Engineers, Washington Award Banquet, *The Future of Engineering*, Chicago, IL
- Latin School of Chicago, *Mars Exploration*, Chicago, IL
- Iowa State Engineer's Week Banquet, Educating Creative Engineers, Des Moines, IA
- Oklahoma Scholarship/Leadership Program, *Managing Creativity*, University of Oklahoma, Norman, OK
- Rochester Women's Network, Managing Creativity, Rochester, NY
- American Association of Museums, *The Mars Millennium Project*, Baltimore, MD
- National Science Foundation Distinguished Lecture Series, *The Joys and Sorrows of R&D*, Washington, DC
- American Academy of Achievement, *The Future of Space Exploration*, Scottsdale, AZ
- Written Testimony on the *Causes of the Mars Surveyor 98 Mission Failures* for House Science Subcommittee on Space and Aeronautics

## Donna Shirley Resume

- Presentation to Oklahoma Space Authority on *Science and Commercial Opportunities in Space*, Oklahoma City, OK
- Mars Architecture Workshop, Presentation of Paper *The Myths of Mars*, Houston, TX
- Project Management Institute International Conference, *Managing Creativity Seminar*, Houston, TX
- Platform Computing User's Conference Keynote Speech, *Managing Creativity*, Toronto, CN
- Penn State University at Erie (Behrend), *Creativity in Engineering*, Erie, PA
- Dallas Women's Museum Dedication, Book signing, Dallas, TX

### 1999

- Introduction of First Lady Hillary Rodham Clinton's Keynote speech at the Mars Millennium Project Kickoff Event, Washington, DC
- Keynote speech to Nortel Networks Caribbean and Latin American Sales Conference, *Managing Creativity*, Cancun, Mexico
- Keynote speech to Monsanto Agricultural Sales Division, *Managing Creativity*, Maui, Hawaii
- Scripps College "Wired Women" Conference, *New Educational Technology*, Claremont, CA
- Association of Superintendents and Curriculum Developers, *The Mars Millennium Project*, San Francisco, CA
- Anderson Consulting Products Technology Group, *Managing Creativity*, Denver, CO
- National Association of Elementary School Principals, *The Mars Millennium Project*, San Francisco, CA
- Space Exploration Symposium: A Legacy for the New Millennium, *The Future of Space Exploration*, Washington, D.C.
- Welch Allyn, Inc. Training Conference, *Managing Creativity*, Skaneateles, NY
- Hewlett Packard Women's Network, *Managing Creativity*, Boise, ID
- Simmons Graduate School of Management Alumni Association, *Managing Creativity*, Boston, MA.
- Harvey Mudd College Commencement Address, Claremont, CA
- National Academy of Engineering's Summit on Women in Engineering, *Women in Engineering: Focus on Success*, Washington, D.C
- Women In Technology International Conference, *Managing Creativity*, Santa Clara, CA
- Young Presidents of Southern California, *Managing Creativity*, Santa Ana, CA
- National PTA Meeting, *The Mars Millennium Project*, Portland, OR
- *The Mars Program*, San Francisco Symphony concert, Mt. View, CA
- *Women in Space: Past, Present and Future* panel discussion for STS-93 launch, Cape Canaveral, FL
- 99's International Women's Flying Club Museum Dedication and Awards Banquet, *Mars Exploration*, Oklahoma City, OK
- Lucent Science Scholars Summit, Murray Hill, NJ
- From the Bowl to The Moon LA Symphony concert, Hollywood Bowl, Los Angeles, CA
- State Farm Insurance Lifetime Best Sales Conference, *Managing Creativity*, Colorado Springs, CO
- Flagstaff Science Festival, *Mars Exploration*, Flagstaff, AZ
- Abbot Laboratories Training Conference, *Managing Creativity*, Abbot Park, IL
- Museum of Kansas Cosmosphere Space Center, *Mars Exploration*, Hutchinson, KS
- SC99 High Speed Computing Conference, *Managing Creativity*, Portland, OR

### 1998

- Commencement Address, SUNY Rome/Utica, NY
- PriceWaterhouseCoopers Women Partners' Meeting Keynote, *Managing Creativity*, Atlanta, GA
- American Management Association 75th Anniversary Meeting Keynote, *Managing Creativity*, San Francisco, CA
- State of the World Forum, *The Future of Space Exploration*, San Francisco, CA
- AT&T Executive Exchange on Project Management, *Managing Creativity*, Basking Ridge, NJ
- Discussion on Space Exploration with astronauts Scott Carpenter and Guy Bluford, Mary Washington College, Fredericksburg, VA
- SwissCom Symposium Keynote, *Managing Creativity*, Lucerne, Switzerland
- *The Policy Process*, to UCLA Public Policy graduate students:
- National Book Tour for Managing Martians
- Society of Women Engineers National Convention Keynote, *Mars Exploration*, Houston, TX

## Donna Shirley Resume

- Commencement Address, Graduate Division, UC Santa Barbara, CA
- Women In Technology International Conference Hall of Fame Awards Banquet Keynote, *Bending the Glass Ceiling*, Santa Clara, CA
- American Academy of Achievement Conference Panelist, *The Future of Space Exploration*, Jackson Hole, WY
- Three Hewlett Packard Women's Conference Keynotes, *Managing Creativity*,
- Commencement Address, Scripps College for Women, Claremont, CA
- Association of University Women's Conference Keynote, *Bending the Glass Ceiling*, San Francisco, CA
- LA County Museum of Science Award Banquet Keynote, *Mars Exploration*, Los Angeles, CA
- National Science Teachers Association Convention Keynote, *Mars Exploration*, Las Vegas, NV
- Disney Imagineering Executive Retreat, *Challenges of Project Management*, Santa Monica, CA
- National Basketball Association All Star Weekend "Newsmaker's" Breakfast, *Bending the Glass Ceiling*, New York, NY
- National Convention of American Association of Physics Teachers, *Mars Exploration*, New Orleans, LA

### 1997

- Keynote for Governor Wilson's Women's Conference, *Bending the Glass Ceiling*, Long Beach, CA
- Keynote for Oregon State University Leonardo Da Vinci Days, *Mars Enlightenment*, Corvallis, OR
- 1997 Werner von Braun Lecture at the National Air and Space Museum, *Mars: Fact Vs Fiction*, Washington, DC
- Girls' Nation National Convention (with Vice President Gore), *Mars Exploration*, Washington, DC