RADFORD BYERLY, JR.

Science and Technology Policy

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Served 15 years on the staff of the U.S. House of Representatives Committee on Science. Now active in science and technology policy as a research associate at the Center for Science and Technology Policy Research, University of Colorado, writing, and serving on policy-relevant committees and activities. For example, has served on: Board of Directors, Associated Universities for Research in Astronomy; National Research Council (NRC), Committee on Principles and Operational Strategies for Staged [nuclear waste] Repository Systems; and was Co-convener and organizer of National Academy of Sciences workshops on the changing environment for scientific research (1993, 1994) [See page 5 for a more complete list of service.]

Elected Fellow of AAAS in 2001. In 2008 Colorado Governor Bill Ritter appointed Byerly to the Colorado Air Quality Control Commission, a regulatory body.

Writings, etc., are listed in the Publications section, beginning on page 6.

PREVIOUS EXPERIENCE:

Vice President for Public Policy and Director, Walter Orr Roberts Institute, University Corporation for Atmospheric Research (UCAR), Boulder, CO; 1993 - 1994.

UCAR, a consortium of 61 Universities, manages the National Center for Atmospheric Research and related programs. Member of President's Council responsible for the overall management of UCAR. Directly managed three offices: (i) Government Affairs, which monitored the budgetary, legislative and policy activities of Congress and the relevant Federal agencies. (ii) Corporate Affiliates, an industry interface which promoted interactions between affiliated companies and UCAR; and (iii) Development, which pursued project support from public and private sources.

The Walter Orr Roberts Institute was devoted to the application of scientific research and science and environmental policy for the betterment of humankind, with the motto "Science in the service of society."

Chief of Staff, Committee on Science, Space, and Technology, U.S. House of Representatives; 1991 - 1993.

The Committee has *legislative* jurisdiction over civilian research and development (R&D) except health and agricultural research. NASA, NSF, DOE, NOAA, NIST, and other agencies fall within its jurisdiction. Its *oversight* responsibility includes all civilian R&D. Staff assists the Members in carrying out the functions and responsibilities of the Committee. The Chief of Staff manages the

staff on behalf of the Chairman to ensure the effective operation of the Committee. This involves identifying issues, setting work priorities, delegating and assigning responsibilities, budgeting, planning, coordinating activities with other committees and between subcommittees; and assuring compliance with House rules. Specific duties included:

! The Chief of Staff reports directly to the Committee Chair, but also consults with other Members, especially subcommittee chairs; melds the interests of the Members with those of the Chair in order to plan and accomplish the Committee's legislative and oversight agenda.

! Tracking of science and technology developments, identification of policy issues, and articulation of problems and alternative policy responses. This was accomplished in part through consulting with groups and individuals in the Committee's constituency.

! Promotes the Committee politically in Congress and in its constituency, for example, by responding to press inquiries and representing the Committee in diverse fora.

! Recruiting and developing a talented and motivated staff and working collegially with them to achieve the Committee's agenda.

Accomplishments: Reorganized and revitalized committee staff under a new chairman; increased work output and its quality over previous years, e.g., House passage of DOE research authorization; defeated two attempts by Appropriations Committee to terminate NASA's Space Station program. Chaired staff task force on Health of Research which led to Committee effort to address problems facing U.S. science. Increased recognition of Committee in the House and in the press.

Director, Center for Space and Geosciences Policy, University of Colorado, Boulder, Colorado; 1987 - 1991.

The Center promoted interdisciplinary research and teaching in two related areas. First, space policy, encompassing the political, budgetary, commercial, economic, legal, and international issues arising from man's exploration and use of outer space. For example, large space programs such as the Space Station or a return to the moon raise many policy and budgetary issues.

The second area, geosciences policy, focused on policy issues that emerge as we begin to understand the Earth as a closely integrated system, and how human activities change that system. For example, as global climate changes occur due to the "greenhouse effect," many socioeconomic impacts will need clarification.

As director, assumed overall responsibility for the operations of the Center and the supervision of its staff, reporting to the Dean of the Graduate School. Specific responsibilities included: defining policy research projects; stimulating faculty interest in working on such research; securing funding grants and contracts; carrying out certain research projects; and ensuring the quality of work conducted by or through the Center.

Accomplishments: Establishment of the Center and ongoing space policy research program with

broad faculty and graduate student involvement. Achieved national recognition as a space policy analyst. Edited two books: *Space Policy Reconsidered* (1988) and *Space Policy Alternatives* (1992). Secured private foundation and NASA grants for research support. Initiated global change policy research program. Developed and taught a space policy course for junior and senior undergraduates.

Professional staff, Committee on Science and Technology, U.S. House of Representatives; 1975 - 1987.

Duties involved policy formulation, drafting and advancing legislation, oversight of agency activities, and investigations, in three different positions:

(1) 1985 - 1987. Staff Director, Subcommittee on Space Science and Applications. Reported directly to Subcommittee Chairman, represented him in discussions and negotiations. Was responsible for and supervised work of the Subcommittee staff. Overall responsibility for legislation authorizing NASA's budget and programs (\$8 to 11B); formulation of U.S. civilian space policy including policy for private sector activities in space; international space policy. Issues before the Subcommittee included: Investigation of the Shuttle Challenger accident; national space transportation policy after the Challenger accident; NASA Space Station development and operation; commercial use of space; and news-gathering from space.

Accomplishments: The 1987 and 1988 authorization bills for NASA setting budgets and program directions; establishing policy for the pricing of Shuttle launches; establishing a space council in the White House, and setting U.S. space transportation policy. Promoted U.S. leadership in International Geosphere/Biosphere Program. Subcommittee visit to the Soviet Union which advanced prospects for increased U.S.-U.S.S.R. scientific cooperation.

(2) 1980 - 1985. Professional staff, Subcommittee on Space Science and Applications.
 Responsible for Space Science and Applications activities in NASA. The applications area included remote sensing from space (e.g., gathering data for mineral prospecting), satellite communications, and studies of the Earth's climate and its impacts on agriculture, shipping, etc. Space science includes astronomy and astrophysics, planetary exploration, solar and space physics, and life and microgravity sciences.

Accomplishments: Annual authorizations for NASA space science and space applications programs (over \$1 billion per year). Legislation to guide LANDSAT commercialization. Member of U.S. delegation to United Nations Conference on the Exploration and Peaceful Uses of Outer Space (August 1982; Vienna); and prepared the the Congressional delegation's report of the Conference.

(3) 1975 - 1980. Professional staff, Subcommittee on Natural Resources and Environment (or differently-named predecessors) responsible for following areas of subcommittee jurisdiction: Environmental Protection Agency research and development; Department of Energy environmental research and development; weather services; weather modification; National Climate Program; and health effects of non-ionizing radiation.

Accomplishments: Annual bills authorizing EPA research and development (\$300 million/year) and environmental research in DOE (\$200 million/year); National Climate Program Act; amendments to the Clean Air Act on protection of the stratospheric ozone layer; research sections of the Resource Conservation and Recovery Act of 1976; conducted and/or supervised significant studies of epidemiology research in EPA and resource recovery from solid waste.

In addition as Department of Commerce "Science Fellow," 1973-1974, served the fellowship as staff on the House Science Committee.

ADDITIONAL PROFESSIONAL EXPERIENCE has been in carrying out and managing scientific and technical programs.

At the National Bureau of Standards (NBS, now the National Institute of Standards and Technology, NIST) held a series of positions of increasing responsibility (1969 - 1975):

(1) Manager of Air Programs -- developed and ran NBS air pollution research program including projects in smog chemistry and development of measurement methods and standards. Duties included program planning and oversight, budgeting, liaison with industry, EPA, and other Federal and local environmental agencies.

(2) Deputy Chief, Fire Technology Division -- ran several Division operations (planning, budgeting, project oversight, personnel). Program ranged from combustion kinetics through building codes and standards to fire fighting equipment.

(3) Assistant to the Director, NBS -- oversaw program planning and policy studies on pollution, voluntary standards, biomedical technology, Federal computer policy; helped revise NBS program structure; trouble-shooting.

Postdoctoral fellowship at the Joint Institute for Laboratory Astrophysics, Boulder (1967 - 1969), experimental physics related to processes in the upper atmosphere.

Engineer at Northern Research and Engineering Corporation (1961 - 1963), computer models for turbomachinery design.

EDUCATION

PhD, Physics, Rice University, 1967. Atomic and Molecular Physics. NSF Fellowship.

BA and MA, Physics, Williams College, 1958 and 1960. Phi Beta Kappa.

While at NBS/NIST, several government training courses.

REFERENCES supplied on request.

OTHER SERVICE

NASA Space Science Advisory Committee (1994 - 98),

University Political Science PhD committees (1991 - 1996),

Office of Technology Assessment advisory committee on space launch vehicles;

Co-organizer and co-chair of session at AAAS annual meeting on "What is the Future for the Physical and Mathematical Sciences?" (1995);

Moderated a panel on "Basic Research and American Democracy: Elitism and Egalitarianism" at annual Sigma Xi Forum (1995);

Judged graduate student competition in Interdisciplinary Telecommunications Program (1995).

NRC (National Research Council of the National Academies of Science) Committee on the Department of Energy-Office of Science and Technology's Peer Review Program, (1996-98);

NRC Committee on DOE Environmental Quality Research Program (1999-2000);

Vice Chair, (and Chair-elect), Council of Institutions, University Space Research Association (1990 - 1991);

University Seminar on Global Habitability, Columbia University (1984 - 1987);

AIAA Public Policy Committee (1987 - 1990), Chair, Space Subcommittee (1988 - 1989);

NASA Advisory Committee on Space Station, (1987-1991)

NASA Advisory Committee on Space Science and Applications (1988 - 1991);

NRC Space Studies Board, Task Group on Priorities in Space Research (1989 - 1991);

Editorial Board Space Policy (1988 - 1991);

Board of Advisors, *Colorado Journal of International Environmental Law (1989 - 1991)*; Advisory Committee on Space, United Nations Association (1985 - 1986). NRC Board on Assessment of Programs of the National Institute of Standards and Technology (NIST, formerly the National Bureau of Standards, NBS);

Committee on Science, Engineering, and Public Policy of the American Association for the Advancement of Science (AAAS)(1991-7?);

Kennedy School Commission on Global Change Information Policy (1991 - 1994)

Board of Visitors, Columbia University Center for Science, Policy, and Outcomes; (dates mid- 1990s?)

Occasionally review and evaluate reports and/or proposals for National Research Council, National Science Foundation, and Environmental Protection Agency

1988-89 Honor Lecturer, Mid-America State Universities Association.

PUBLICATIONS RADFORD BYERLY, JR.

[The serial designations refer to publications of the Committee on Science and Technology of the U.S. House of Representatives.]

- 1. Master's Thesis: *Diatomic Molecular Spectra: Singly Ionized Nitrogen Molecule*, Williams College, 1960.
- 2. Ph.D. Thesis: *Atomic and Molecular Reactions in an Optically Pumped Helium Discharge*, Rice Univ., 1967.
- 3. "Search for Atom-Atom Interchange in He₂-He Collisions", with G.K. Walters. *Bulletin*, American Physical Society, **12**, 1967, 224.
- 4. "Electron Affinities of Negative Ions and Dependence of Photodetachment Cross-sections on Wavelength", with L.M. Branscomb and R. Lelevier, *STP Notes*, ICSU, **5**, 1969, 35.
- 5. "Sunlight Photodetachment of 0₃⁻", with E.C. Beaty, *Journal of Geophysical Research*, **76**, 1971, 4596.
- 6. Investigation of Products of Tire Wear, with R.L. Raybold, NBS Report 10834, April, 1972.
- 7. *Measures for Air Quality -- Annual Report -- FY 1971*, with J.R. McNesby. NBS Technical Note 711, 1972.
- 8. *Fire Prevention and Control Act of 1974* (legislative report to accompany H.R. 11989), U.S. House of Representatives, Report 93-795, 1974 (with others).
- 9. "New Developments in the Measurement of Gaseous Pollutants in Air". *IEEE Transcript on Nuclear Science*, NS-22, 1975, 856.

- 10. Stratospheric Research and Protection Act of 1975 *(legislative report to accompany H.R. 3118)*, U.S. House of Representatives, Report 94-575, October 28, 1975 (principal author).
- 11. Solid Waste Research and Development Act of 1976, U.S. House of Representatives, Report 94-1461, September 1, 1976 (principal author).
- 12. Report on Joint Hearings on the Conduct of the Environmental Protection Agency's "Community Health and Environmental Surveillance System" (CHESS) Studies, Joint Report of the Committee on Science and Technology and the Committee on Interstate and Foreign Commerce, April 9, 1976 (principal author).
- 13. Report on the Environmental Protection Agency's Research Program with primary emphasis on the Community Health and Environmental Surveillance System (CHESS): An Investigative Report, Serial SS, November 1976 (with others).
- 14. *Ocean Dumping*, (Subcommittee on Environment and the Atmosphere) Serial NNN, December 1976 (principal author).
- 15. Authorizing Appropriations to the Office of Research and Development, Environmental Protection Agency (legislative report to accompany H.R. 5101), U.S. House of Representatives, Report 95-157, April 1, 1977 (principal author).
- 16. *National Climate Program Act of 1977 (legislative report to accompany H.R. 6669)*, U.S. House of Representatives, Report 95-266, May 6, 1977 (principal author).
- Conference report on H.R. 5101, Environmental Protection Agency Research Authorization for Appropriations for Fiscal Year 1978, U.S. House of Representatives, Report 95-722, October 19, 1977 (with others).
- 18. Authorizing Appropriations for the Office of Research and Development, Environmental Protection Agency (legislative report to accompany H.R. 11302), U.S. House of Representatives, Report 95-985, March 17, 1978 (principal author).
- 19. Conference report on H.R. 6669, National Climate Program Act, U.S. House of Representatives, Report 95-1439, August 14, 1978 (with others).
- Conference report on H.R. 11302, Environmental Protection Agency Research Authorization for Appropriations for Fiscal Year 1979, U.S. House of Representatives, Report 95-1593, September 20, 1978 (with others).
- 21. *Summary of Activities* (Subcommittee on Environment and the Atmosphere), Serial BBB, December 1978 (with others).
- 22. Authorizing Fiscal Year 1980 Appropriations to the Office of Research and Development, Environmental Protection Agency (legislative report to accompany H.R. 2676), U.S. House of Representatives, Report 96-58, March 20, 1979 (principal author).
- 23. Conference report on H.R. 2676, Environmental Protection Agency Research Authorization for Appropriations for Fiscal Year 1980, U.S. House of Representatives, Report 96-611, November 9, 1979 (with others).

- 24. "Research in the Environmental Protection Agency", with Hon. G.E. Brown, Jr., *Science*, **211**, p. 1385-1390, March 27, 1981.
- "The View from Earth *or* The Care and Feeding of a Space Program", chapter in *The Case for Mars*,
 P.J. Boston, ed., vol. 57 of American Astronautical Society Science and Technology series. American Astronautical Society, 1981.
- 26. *Future Space Programs: 1981*, (Subcommittee on Space Science and Applications), Serial Z, May 1982 (principal author).
- 27. "Will Planners Have Data Gathered From Space?" Planners Roll Call, VI, No. 7, June 1982.
- "A Congressional View of National Policy Directions in Remote Sensing", Proceedings of Seventeenth International Symposium on Remote Sensing of Environment, Environmental Research Institute of Michigan, Ann Arbor, 1983.
- 29. "Report on UNISPACE '82, the United Nations Conference on the Exploration and Peaceful Uses of Outer Space. Report of the Conference." (Subcommittee on Space Science and Applications), Printed in UNISPACE '82, Report and Hearing, Committee on Science and Technology, 97th Congress, Serial No. 160. July 1984 (principal author).
- 30. Land Remote-Sensing Commercialization Act of 1984. (legislative report to accompany H.R. 5155), U.S. House of Representatives, Report 98-647 (with others).
- 31. *The International Geosphere/Biosphere program 1984*. (Subcommittee on Space Science and Applications) Serial B, April 1985 (principal author).
- 32. Authorizing Appropriations to the National Aeronautics and Space Administration for Fiscal Year 1986 (legislative report to accompany HR 1714), U.S. House of Representatives, Report 99-32 (with others).
- 33. *NASA Authorization Act, 1986*, Conference Report, U.S. House of Representatives, Report 99-379 (with others).
- 34. Authorizing Appropriations for Landsat Commercialization. (legislative report to accompany H.R. 2800) U.S. House of Representatives Report 99-177, June 20, 1985 (with others).
- 35. *The Mississippi Technology Transfer Act of 1985. (legislative report to accompany H.R. 3235.)* U.S. House of Representatives, Report 99-322, October 23, 1985 (principal author).
- 36. "The Commercial/Industrial Uses of Space," chapter in *Beyond Spaceship Earth, Environmental Ethics and the Solar System*, E.C. Hargrove, editor, Sierra Club Books, San Francisco, 1986.
- 37. National Aeronautics and Space Administration Authorization Act, 1987 (legislative report to accompany HR 5495), U.S. House of Representatives, Report 99-829 (with others).
- 38. *Investigation of the Challenger Accident*, U.S. House of Representatives Report 99-1016 (staff report, written with others).
- 39. "Decisions on Space Initiatives," chapter in *The Case for Mars III*, vol. 74 of American Astronautical Society Science and Technology series, Univelt, San Diego, 1989.

- 40. "The Policy Dynamics of Global Change", Earthquest, vol. 3, no. 1, Spring 1989.
- 41. *Space Policy Reconsidered*, book editor, Westview Press, Boulder, Colorado, 1989. Includes "Introduction".
- 42. "Future Directions for Space Policy Research", with R. Brunner, chapter in *Space Policy Reconsidered*, see no. 41.
- 43. "Not Where, But How Do We Go From Here?" Ad Astra, January 1990.
- 44. "The Space Station Programme", with R. Brunner, Space Policy, May 1990.
- 45. "Data Transmission: An Opportunity for Space Commercialization," *Space Commerce*, vol. 1, no. 2, December 1990.
- 46. "Managing the Federal Investment in Research and Development: A View from Congress", in Science and Technology Policy Yearbook, 1991, M.O. Meridith, S.D. Nelson, and A.H. Teich, eds, Committee on Science, Engineering, and Public Policy, American Association for the Advancement of Science, 1991.
- 47. Space Policy Alternatives, book editor, Westview Press, Boulder, Colorado, 1992, Includes "Introduction".
- 48. Three Chapters in Space Policy Alternatives, see no. 47:
- (a) "Can the United States Conduct a Vigorous Civilian Space Program?"
- (b) "The Future of the Space Station Program" with R. Brunner and R. Pielke, Jr.
- (c) "The Space Shuttle Program: 'Performance Versus Promise'", with R. Pielke, Jr.
- 49. Preface, with Richard N. Zare, in *Beginning a Dialogue on the Changing Environment for the Physical and Mathematical Sciences/Report of a Conference*, National Research Council, National Academy Press, Washington DC, 1994.
- 50. "Political Science", (review of *Working With Congress: A Practical Guide for Scientists and Engineers* by W. G. Wells), *Issues in Science and Technology*, vol X, no 3, spring 1994, p 92.
- "U.S. Science in a Changing Context: A Perspective", in U.S. National Report to the International Union for Geodesy and Geophysics (1991-1994), *Reviews of Geophysics*, Supplement, p A1-A16, July, 1995.
- 52. "The Changing Ecology of U.S. Science", with R. Pielke, Jr., Science, Sept 15, 1995, p 1531.
- 53. "Editorial Comment", Climatic Change, 32, 1996, p 163.
- 54. [book review] Can Democracies Fly in Space? The Challenge of Revitalizing the U.S. Space Program, American Political Science Review, **90**, No. 3 (Sep. 1996) p. 653.
- 55. "A Path Beyond the Ecology of Science", chapter in *AAAS Science and Technology Policy Yearbook* 1998, Teich, Nelson, and McEnaney, eds, AAAS, 1997, p 81-87.
- 56. "Beyond Basic and Applied", with R. Pielke, Physics Today, Feb 1998, p 42.

- 57. "Prediction in Policy: A Process not a Product" with D. Sarewitz, *Natural Hazards Observer*, invited comment, p 1-3, Jan 1999.
- 58. "Prediction: A Process Not a Product" with D. Sarewitz and R. Pielke, Jr., *Geotimes* April 1999, pp. 29-31.
- 59. with R. Pielke, Jr., D. Sarewitz, and D. Jamieson (1999), Prediction in the Earth Sciences and Environmental Policy Making. *EOS: Transactions of the American Geophysical Society* 80 9 ff, 13 July 1999.
- 60. *PREDICTION: Science and the Future of Nature*, book co-editor with Sarewitz and Pielke, Island Press, 2000. Includes "Introduction: Death, Taxes, and Environmental Policy".
- 61. "Prediction and Characteristic Times", chapter in PREDICTION, no. 60, above.
- 62. "Decision Making and the Future of Nature: Understanding and Using Predictions", with Sarewitz and Pielke, concluding chapter in *PREDICTION*, no. 60, above.
- 63. Statement to the US House Committee on Science. *Hearing on New Directions for Climate Research and Technology Initiatives* April 17, 2002.
- 64. "A Practical and Glorious Spave Program" SpaceNews, Jan 20, 2003, p 15.
- 65. with R.B. Leshner and P.L. Whitney, *Issues and Opportunities Regarding the U.S. Space Program. Report of a Workshop*, Space Studies Board, National Research Council, National Academies Press (2004).
- 66. "National Aeronautics and Space Administration," entry in C. Mitcham (Ed.) (2005) *Encyclopedia of Science Technology and Ethics* 1266-1267, Farmington Hills, MI: Macmillan Reference.
- 67. "Space Shuttles Challenger and Columbia Accidents" entry in C. Mitcham (Ed.) (2005) *Encyclopedia* of Science Technology and Ethics 1835-1838, Farmington Hills, MI: Macmillan Reference.
- 68. with R.A. Pielke, Jr., "Shuttle programme lifetime cost", *Nature*, Vol. 472 (7341), pp. 38-38, issn: 0028-0836.

HEARINGS

[The following hearings were organized by me or under my direct supervision, and I directed their publication. The serial designations refer to publications of the Committee on Science and Technology of the U.S. House of Representatives.]

Before the Subcommittee on the Environment and the Atmosphere, Committee on Science and Technology, 94th Congress:

Inadvertent Modification of the Upper Atmosphere: R&D Relating to Halocarbons and Ozone Depletion, May/July 1975, Number 24.

R&D Related to Sulfates in the Atmosphere, July 1975, Number 39.

Solid Waste Management and Resource Recovery, April 1976, Number 102.

The Conduct of the EPA's Community Health and Environmental Surveillance Systems (CHESS) Studies, April 1976, Number 109.

Before the Subcommittee on the Environment and the Atmosphere, Committee on Science and Technology, 95th Congress:

1978 Authorization for the Office of Research and Development, Environmental Protection Agency, February/March 1977, Number 15.

NOAA Research Budget for Fiscal Year 1978, March 1977, Number 27.

Environmental Health Research at the National Institutes of Health, March 1977, Number 28

National Climate Program, April 1977, Number 29.

Long-Term Environmental Research in the Environmental Protection Agency, June 1977, Number 42.

Environmental Monitoring, September 1977, Number 44.

Environmental Implications of the New Energy Plan, June/July/September 1977, Number 45.

Special Urban Air Pollution Problems: Denver and Houston, November 1977, Number 52.

Environmental Research at the National Institutes of Health -- Fiscal Year 1979, March 1, 1978, Number 65.

Environmental R&D Issues Related to the Interagency Regulatory Group, April 1978, Number 91.

Environmental Monitoring -- II, June/July 1978, Number 93.

1979 Authorization for the Office of Research and Development, EPA, February 1978, Number 99.

EPA Environmental R&D Issues, July/September 1978 Number 119.

Before the Subcommittee on Natural Resources and Environment, Committee on Science and Technology, 96th Congress:

1980 Authorization for the Office of Research and Development, Environmental Protection Agency, February 1979, Number 5.

Implementation of the Climate Act, July 1979, Number 40.

Implementation of the Climate Act, II, November 1979, Number 62.

Research on Health Effects of Non-Ionizing Radiation, July 1979, Number 70.

1981 DOE Authorization: Environment Programs, February 1980, No. 107.

Before the Subcommittee on Space Science and Applications, Committee on Science and Technology, 97th Congress.

Civil Land Remote Sensing Systems, July 1981, Number 40.

Future Space Programs: 1981, September 1981, Number 50.

Space Telescope: 1982, May 1982, Number 99.

UNISPACE '82, July 1982, Number 160.

Before the Subcommittee on Space Science and Applications, Committee on Science and Technology, 98th Congress.

NASA's Five Year Plan, July 1983, Number 38.

Review of Materials Processing in Space, September 1983, Number 42.

The Commercialization of Meteorological and Land Remote-Sensing Satellites, April, June, July, and November 1983, Number 53.

The Land Remote-Sensing Commercialization Act of 1984 -- H.R. 4836 and H.R. 5155, March 1984, Number 74.

Before the Subcommittee on Space Science and Applications, Committee on Science and Technology, 99th Congress.

Landsat Commercialization, June 1985, Number 30.

Space Science: Past, Present, and Future, Number 60.

Space Science and the Space Station, Number 75.

Scientists and Engineers: Supply and Demand, Number 102.

The International Geosphere/Biosphere Program, September 1984, Number 118.

FY 1987 NASA Authorization, February 1986, Number 132.

Before the Subcommittee on Space Science and Applications, Committee on Science and Technology, 100th Congress.

1988 NASA Authorization, Number 35.

LEGISLATION

[Major role in the following legislation:]

1. P.L. 94-580, Resource Conservation and Recovery Act of 1976 (Subtitle H, Research and Development).

2. P.L. 95-95, Clean Air Act Amendments of 1977 (Title I, Part B, Ozone Protection).

3. P.L. 95-155, Authorizing Appropriations for Research at the Environmental Protection Agency for FY 1978.

4. P.L. 95-367, National Climate Program Act.

5. P.L. 95-477, Authorizing Appropriations for Research at the Environmental Protection Agency for FY 1979.

6. P.L. 96-229, Authorizing Appropriations for Research at the Environmental Protection Agency for FY 1980.

7. P.L. 97-96, Authorizing Appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes for 1982.

8. P.L. 97-324, Authorizing Appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes for 1983.

9. P.L. 98-52, Authorizing Appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes for 1984.

10. P.L. 98-361, Authorizing Appropriations to the National Aeronautics and Space Administration for Fiscal Year 1985.

11. P.L. 98-365, the Land Remote-Sensing Commercialization Act of 1984.

12. P.L. 99-62, Authorizing Appropriations for Landsat Commercialization.

13. P.L. 99-170, Authorizing Appropriations to the National Aeronautics and Space Administration for fiscal year 1986.

14. P.L. 99-171, The Mississippi Technology Transfer Act of 1985.

15. P.L. 100-107, Authorizing Appropriations to the National Aeronautics and Space Administration for fiscal year 1988.

CONGRESSIONAL REPORTS

[The following reports were prepared under my direct supervision or with major guidance and input from me (all published by the Committee on Science and Technology, to which the serial designations refer).]

1. *Research and Development Relating to Sulfates in the Atmosphere*, Congressional Research Service. 94th Congress, Serial F. June 1975.

2. *Readings on Solid Waste Management and Resource Recovery*. Congressional Research Service. 94th Congress, Serial Y. April 1976.

3. *Review of Research Related to Sulfates in the Atmosphere*. Staff report. 94th Congress, Serial AA. April 1976.

4. *The Status of Resource Recovery (A report of Site Visits)*, Congressional Research Service, 95th Congress, Serial LL. August 1978.

5. *Civil Land Remote Sensing Systems* (Subcommittee on Space Science and Applications) Staff Report. 96th Congress, Serial T. December 1981

6. *Visit to Sweden and the Soviet Union* (Subcommittee on Space Science and Applications). 99th Congress, Serial I. October 1985.

7. *Space Science: Past, Present and Future* (Subcommittee on Space Science and Applications). 99th Congress, Serial O. May 1986.

8. Centaur Cost, Schedule and Performance Review, 99th Congress, Report 99-757.

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