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Colorado Springs, CO 80919

DAVID L. KOHLMAN, Ph.D., P.E.
PRINCIPAL, EMERITUS

dlkohlman@engsys.com

Dr. Kohlman is a Principal, Emeritus for Engineering Systems Inc. (ESi). For 55 years, he has been actively involved in industry, education, research, and consulting. Dr. Kohlman has participated in and directed numerous flight test programs and simulator development projects, developed several aeronautical engineering short courses that are taught worldwide, and has participated in over 300 investigations of aircraft accidents, using creative techniques to determine the cause. In addition, he has been a consultant to manufacturers, simulator manufacturers, the FAA, and NASA. Dr. Kohlman has written a book on V/STOL airplanes and authored over 50 technical papers and reports. He is a Fellow of the American Institute of Aeronautics and Astronautics (AIAA). He is also a licensed, instrument rated pilot, with over 3200 hours of flight time and a licensed ground instructor.

Areas of Specialization

Aircraft design and performance
Aerodynamics
Stability and control
Flight and wind tunnel testing
Simulator models
Aircraft icing
Aircraft accident investigation

Education

Ph.D., Aeronautics & Astronautics, Massachusetts Institute of Technology, 1963
M.S., Aeronautical Engineering, University of Kansas, 1960
B.S., Aeronautical Engineering, University of Kansas, 1959

Licensed Professional Engineer (P.E.)

State of Alabama ..... License No. 28389-E
State of Colorado ..... License No. 15210

January 2018

Professional Affiliations/Honors

American Institute of Aeronautics and Astronautics

Fellow
Deputy Director for Honors and Awards, Region V, 1992-1997
Director, Region V, 1977-1980
Deputy Director for Education, Region V, 1974-1977
Chairman, Kansas City Section, 1973-1975
General Aviation Systems Technical Committee, 1974-1978
Career Environment Committee, 1975-1982
Educational Activities Committee, 1974-1978
Faculty Advisor, KU Student Chapter, 1966-1971
General Chairman, General Aviation Technologyfest, November 1975

ABET Ad Hoc Visiting Committee for AIAA

Member, 1969-2001. Served on twelve visiting teams to inspect for granting or renewal of accreditation of aerospace engineering programs.

Engineering Accreditation Commission

Member, 1980-1985. Served as chairman of ten visiting teams to inspect for granting or renewal of accreditation of engineering programs.

NASA Research and Technology Advisory Council

Member, Committee on Aerodynamics and Configurations, 1975-1977

NATO-AGARD Flight Mechanics Panel

Member, 1981-1985

Aircraft Owners and Pilots Association

Member

Board of Trustees, University of Kansas Center for Research, Inc.

Member, 1974-79; 1981-1990. Executive Committee, 1988-1990

Society of Automotive Engineers

Flight Simulation Technical Committee, 1986-2002
General, Corporate and Regional Aviation Committee, 1991-1996

Peer Review Committee, NASA Langley Flight Applications Branch

Chairman, October 1988

Aerospace Engineering Advisory Board, University of Kansas

Member, 1988-2000

Aerospace Engineering Industrial Advisory Board, Embry-Riddle Aeronautical University,
Prescott, AZ, 1996-2002

University of Kansas Aerospace Engineering Alumni Honor Roll, 1995

Tau Beta Pi, Engineering Honorary Society

Sigma Tau, Engineering Honorary Society

Sigma Gamma Tau, Aerospace Engineering Honorary Society

Sigma Xi, Honorary Research Society

National Science Foundation Fellow, 1960-1962

Listed In:

American Men of Science
Who's Who in America
Who's Who in Aviation and Aerospace
Who's Who in the Midwest

Pilot Proficiency

Licensed private pilot - airplane single and multi-engine land
Instrument rating
Ground instructor rating
Test pilot experience
3200 hours total time
Developed and taught one-day short course: "Aerodynamics and Safety for Private and Corporate Pilots", presented in Kansas City, Wichita, and San Diego

Positions Held

Engineering Systems Inc., Colorado Springs, Colorado

Principal, Emeritus, 2002 – present
Director, 2004 – 2011
Principal and Director of Aeronautical Engineering, 1996 – 2002
Vice President and Director of Aeronautical Engineering, 1993 –1996

Kohlman Systems Research, Inc., Lawrence, Kansas

Director, 2002 - present
Co-Founder, Chairman of the Board, 1982 – 2002
President, 1982 - 1988

Kohlman Aviation Corporation, Colorado Springs, Colorado

Founder, President, 1977 - present

Sierra Data Systems, Buffalo, New York

Director, 1998 – 2002

Kohlman Aviation Consulting, Inc., Colorado Springs, Colorado

Founder, President, 1991 - 1993

University of Kansas, Lawrence, Kansas

Aerospace Engineering Department
Director, Flight Research Laboratory, 1981
Professor, 1970 - 1981
Associate Professor, 1967 - 1970
Assistant Professor, 1964 - 1967
Department Chairman, 1967 - 1972

The Boeing Company, Renton, Washington

Research Engineer, Aerodynamics Staff, 1963 - 1964

U.S. Air Force Academy, Colorado Springs, Colorado

Distinguished Visiting Professor, 1976 - 1977

Delft Technological University, Delft, Netherlands

Visiting Professor, 1973

Publications

Book

Kohlman, David L., Introduction to V/STOL Airplanes. Iowa State University Press, Ames, Iowa. 1981.

Journal Articles

Kohlman, David L., "A Theoretical Method of Determining the Ground Effect on Lift and Pitching Moment for Wings of Arbitrary Planform." Minta Martin First Award Papers, Institute of Aeronautical Sciences, 1959, pp. 67-86.

Kohlman, David L., "A Theoretical and Experimental Investigation of a High Speed Light Gas Gun." Minta Martin First Award Papers, Institute of the Aeronautical Sciences, 1960, pp. 82-93.

Kohlman, David L. and Mollo-Christensen, Erik, "Measurement of Drag of Cylinders and Spheres in a Couette-Flow Channel." The Physics of Fluids, 1965, Vol. 8, pp. 1013-1017.

Kohlman, David L., "Should Design Classes Think Big?" Contact, May, 1965, pp. 8-9.

Kohlman, David L., "Rolling Moment Due to Sideslip of Delta Wings." Journal of Aircraft, Vol. 4, No. 6, 1967, pp. 565-567.

Kohlman, David L., "Drift-Off Runway." The Patco Journal, Vol. 2, No. 1, 1969, p. 26.

Kohlman, D.L. and Richardson, R.W., "Experiments on the Use of Dry Ice Ablating Wind-Tunnel Models." Journal of Spacecraft and Rockets, Vol. 6, No. 9, 1969, pp. 1061-1063.

Wentz, W.H., Jr. and **Kohlman, D.L.**, "Vortex Breakdown on Slender Sharp-Edged Wings." Journal of Aircraft, Vol. 8, No. 3, 1971, pp. 156-161.

Kohlman, D.L., "Is Aerospace Engineering Obsolete? No, But It Needs an Overhaul." Astronautics and Aeronautics, June, 1972, p. 17.

Roskam, Jan and **Kohlman, D.L.**, "The Grudging Progress of Lightplane Design." Air Progress, Vol. 34, No. 1, January, 1974, pp. 28-37, 80.

Kohlman, D.L. and Brainerd, Carl H., "Evaluation of Spoilers for Light Aircraft Flight Path Control." Journal of Aircraft, Vol. II, No. 8, August, 1974, pp. 449-456.

Kohlman, David L., "How to Create a Graph." AIAA Student Journal, Vol. 15, No. 1, Spring, 1977, pp. 32-33.

Kohlman, David L., "Professionalism and the AIAA." AIAA Student Journal, Vol. 16, No. 1, Spring, 1978, pp. 14-15.

Kohlman, David L., "Your First Five Years." AIAA Student Journal, Vol. 6, No. 4, Winter, 1979, pp. 10-11.

Kohlman, David L., "Flight Test Results for an Advanced Technology Light Airplane." Journal of Aircraft, Vol. 16, No. 4, April, 1979, pp. 250-255.

Participation in Conferences and Symposia

Kohlman, David L. and Muirhead, V.U., "An Introduction to the Field of Aerospace Engineering for Freshman." Presented at ASEE Annual Meeting, UCLA, June 12-22, 1968.

Wentz, W.H., Jr. and **Kohlman, D.L.**, "Vortex Breakdown on Slender Sharp-Edged Wings." Presented at AIAA Aircraft Design and Operations Meeting, Los Angeles, California, July 14-16, 1969 (AIAA) Paper No. 69-778).

Kohlman, David L. and Roskam, J., "An Assessment of Performance, Stability and Control Improvements for General Aviation Aircraft." Presented at SAE National Business Aircraft Meeting, Wichita, Kansas, March 18-20, 1970 (SAE Paper No. 700240).

Kohlman, D.L. and Roskam, J., "A Review of the University of Kansas Light Airplane Research Program." Presented at SAE National Business Aircraft Meeting, Wichita, Kansas, March 24-26, 1971 (SAE Paper No. 710379).

Chairman of Educational Panel at AIAA 10th Aerospace Sciences Meeting, San Diego, California, January 17-19, 1972 (AIAA Paper No. 72-218).

Crane, H.L., McGhee, R.J. and **Kohlman, D.L.**, "Application of Advanced Aerodynamic Technology to Light Aircraft." Presented at the SAE Business Aircraft Meeting, Wichita, Kansas, April 03-06, 1973 (SAE Paper No. 730318).

Kohlman, David L., "An Example of the Integration of University Research and Education." Presented at ASEE 9th Annual Midwest Regional Conference, Wichita State University, March 28-29, 1974.

Kohlman, David L., "Flight Test Results for an Advanced Technology Light Airplane Wing." Presented at SAE Business Aircraft Meeting, Wichita, Kansas, 2-5 April 1974 (SAE Paper No. 740368).

Roskam, J., Wentz, W.H. and **Kohlman, D.L.**, "Spoilers for Roll Control of Light Airplanes." Presented at the AIAA Mechanics and Control of Flight Conference, Anaheim, California, 05-09 August 1974 (AIAA Paper No. 74-861).

Kohlman, David L. and Ellis, David R., "Direct-Force Control for Light Airplanes." Presented at the AIAA Mechanics and Control of Flight Conference, Anaheim, California, 05-09 August 1974 (AIAA Paper No. 74-862).

Kohlman, David L., Holmes, Bruce J., and Crane, Harold L., "Preliminary Flight Test Results of an Advanced Technology Light Twin-Engine Airplane." Presented at the SAE National Business Aircraft Meeting, Wichita, Kansas, 08-11 April 1975. (SAE Paper No. 750525).

Kohlman, David L., "Drag Reduction Through Higher Wing Loading." Presented at NASA-Industry-University Drag Reduction Workshop, University of Kansas, 14-16 July 1975.

Kohlman, David L., Holmes, Bruce J., and Crane, Harold L., "Preliminary Flight Test Results of an Advanced Technology Light Twin-Engine Airplane (ATLIT)." Presented at the SAE National Business Aircraft Meeting, Wichita, Kansas, 6-9 April 1976 (SAE Paper No. 760497).

Kohlman, David L., "Flight Test Data for Light Aircraft Spoiler Roll Control Systems." Presented at SAE Business Aircraft Meeting, Wichita, Kansas, March 29 - April 01, 1977 (SAE Paper No. 770441).

Kohlman, David L., "Flight Test Results for an Advanced Technology Light Airplane." Presented at AIAA Aircraft Systems and Technology Meeting, Seattle, Washington, 22-24 August 1977 (AIAA Paper No. 77-1217).

Kohlman, D.L., Schweikhard, W.G., and Evanich, P., "Icing Tunnel Tests of a Glycol-Exuding Porous Leading Edge Ice Protection System on a General Aviation Airfoil." Presented at the AIAA 19th Aerospace Sciences Meeting, St. Louis, 12-15 January 1981 (AIAA Paper No. 81-0405).

Matsuyama, Garey T. and **Kohlman, David L.**,"An Assessment of Advanced Technologies for Application to General Aviation." Presented at the SAE Business Aircraft Meeting, Wichita, Kansas, 7-10 April 1981.

Kohlman, David L. and Holmes, Bruce J., "Assessment of Advanced Technologies for High Performance Single-Engine Business Airplanes." Presented at the 13th Congress of International Council of the Aeronautical Sciences/AIAA Aircraft Systems and Technology Conference, 22-27 August 1982 (Published in Proceedings, pp. 512-562).

Kohlman, David L., "Performance Improvements of Single-Engine Business Airplanes by the Integration of Advanced Technologies." Presented at the Annual Meeting of the Deutsche Gesellschaft fur Luft- und Raumfahrt, Stuttgart, West Germany, 5-7 October 1982.

Albright, A.E. and **Kohlman, David L.**, "An Improved Method of Predicting Anti-Icing Flow Rates for a Fluid Ice Protection System." Presented at the AIAA 22nd Aerospace Sciences Meeting, Reno, Nevada, 9-12 January 1984 (AIAA paper No. 84-0023).

Kohlman, David L., "An Expert's View of the Aviation Law Practice." Presented at Regional Aviation Law Institute Conference, Wichita, Kansas, 02-03 August 1985 (Sponsored by the Kansas Bar Association).

Kohlman, D.L., Levy, D.W., and Schweikhard, W.G., "An Alternative Method for Obtaining Design and Verification Data for Flight Training Simulators." Presented at IATA Eighth Flight Simulator Technical Subcommittee Meeting, Geneva, Switzerland, 22-24 April 1986.

Kohlman, David L., "An Expert's View of the Aviation Law Practice." Presented at the Twenty-First Annual SMU Air Law Symposium, Dallas, Texas, 05-07 March 1987; Twenty-Fifth Annual SMU Air Law Symposium, Dallas, Texas, 21-23 February 1991.

Kohlman, D.L., Schweikhard, W.G., and Renz, R.R.L., "Advances in Flight Test Instrumentation and Analysis." Presented at SAE Technology Conference and Exposition, Long Beach, California, 05-08 October 1987.

Kohlman, D.L., "A Comparison of Flight Test and Predictive Results from a Series of Simulator Data Generation Programs." Presented at AIAA Fourth Flight Test Conference, San Diego, California, 18-20 May 1988.

Kohlman, D.L., "Flight Path Reconstruction and Analysis Utilizing Radar Data." Presented at the 106th Annual Meeting of the Kansas Bar Association, Topeka, Kansas, 08-10 June 1988.

Kohlman, D.L., "A New Look at Icing Certification." Presented at the AIAA Techfest XVI, Wichita, Kansas, 02-04November 1989.

Winn, R.C. and **Kohlman, D.L.**, "Computer Simulation of Aircraft and Automobile Behavior Upon Water Impact," AIAA Aerospace Sciences Meeting, Reno, NV, January 1998.

Kohlman, D.L., "A Survey of Flight Path Measurement Methods," Presented at Braunschweiger Symposium f&Flugmesstechnik, Sonderforschungsbereich 420, Braunschweig, Germany, 31 March 1998.

Kohlman, D.L., "Development of Aerial Refueling Simulator Models," Presented at Seminar on System Identification, DLR Institut f&Flugmechanik, Braunschweig, Germany, 2 April 1998.

Winn, R.C., **Kohlman, D.L.**, and Kenner, M.T., "Improving the Aerodynamics of Top Fuel Dragsters," Proceedings of the 33rd Intersociety Energy Conversion Engineering Conference, Colorado Springs, CO, August 1998.

Winn, R.C., Kenner, M.T., and **Kohlman, D.L.**, "Optimal Wing Design for Top-Fuel Dragsters," AIAA99-0464, Reno, NV, January 1999.

Kohlman, D.L. and Winn, R.C., "Analytical Prediction of Trajectories of Ice Pieces after Release in an Airstream," AIAA 2001-0680, Reno, NV, January 2001.

University Reports

Kohlman, David L., "Experiments on Cylinder Drag, Sphere Drag and Stability in a Rectilinear Couette Flow." Massachusetts Institute of Technology, Fluid Dynamics Report 63-1, 1963, 144 pages.

Kohlman, David L. and Drake, Linda R., "Handbook for Estimating C_{λ_β} for Rigid and Elastic Airplanes at Subsonic and Supersonic Speeds." CRES Report FRL 67-001, University of Kansas, March 1967, 58 pages.

Kohlman, David L., "Results of a Flight Test of the Brandt Drift-Off Runway." CRES Report FRL 68-004, University of Kansas, July 1968, 24 pages.

Wentz, William H., Jr. and **Kohlman, David L.**, "Wind Tunnel Investigations of Vortex Breakdown on Slender Sharp-Edged Wings." CRES Report FRL 68-013, University of Kansas, November 1968, 110 pages (Also NASA CR-98737, November 1968).

Kohlman, David L., "An Investigation of the Landing Dynamics of the Beechcraft Model E-24." CRES Report FRL 69-003, University of Kansas, June 1969, 46 pages.

Brainerd, Carl H. and **Kohlman, David L.**, "A Simulator Evaluation of the Use of Spoilers on a Light Aircraft." CRES Report FRL 72-004, University of Kansas, March 1972, 109 Pages (Also NASA Contractor Report CR-2121, October 1972).

Kohlman, David L., "Flight Test Data for a Cessna Cardinal." CRES Report FRL 72-011, University of Kansas, July 1972, 29 pages (Also NASA Contractor Report CR-2337, January, 1974).

Kohlman, David L., "Flight Evaluation of a Spoiler Roll Control System on a Light Twin-Engine Airplane." Report No. KU-FRL 203, University of Kansas Center for Research, Inc., December 1976 (Also NASA Contractor Report 2935, January 1978).

Kohlman, David L., "Flight Evaluation of an Advanced Technology Single-Engine Airplane." Report No. KU-FRL 204, University of Kansas Center for Research, Inc., December 1976.

Kohlman, David L., Schweikhard, William G., Albright, Alan, and Evanich, Peggy, "Icing Tunnel Tests of a Glycol-Exuding Porous Leading Edge Ice Protection System on a General Aviation Airfoil." Report No. KU-FRL-464-1, University of Kansas Center for Research, Inc., May 1981.

Kohlman, David L., "A Method of Predicting Flow Rates Required to Achieve Anti-Icing Performance with a Porous Leading Edge Ice Protection System." Report No. KU-FRL-464-5, University of Kansas Center for Research, Inc., NASA Grant NAG 3-71, February 1983.

Kohlman, David L. and Hammer, James, "Design Study of Technology Requirements for High Performance Single-Propeller-Driven Business Airplanes." KU-FRL-487-1, University of Kansas Center for Research, Inc., November 1983 (Also NASA Contractor Report 3863, January 1985).

Industrial and Government Technical Reports

Winn, R.C. and **Kohlman, D.L.**, "Analysis and Recommendations Concerning the Malibu Meridan Nose Wheel Steering Investigation," The New Piper Aircraft, Inc., Report No. 10231C-1, September 2002.

Kohlman, D.L. and Slane, J.H., "Analysis of Ice Accretion on the Embraer ERJ-170 Regional Jet", Embraer-Empresa Brasileira de Aeronautica S/A, Report No. 7815C, November 2000.

Kohlman, D.L., "Prediction of Ice Accretion on the Nose of the ERIEYE/EMB 145H DoU and Trajectories of Shed Ice Shapes," Ericsson Microwave Systems, AB, Report No. 6818-1, February 2000.

Kohlman, D.L. "Analysis of Ice Accretion on the Lockheed Martin Skunk Works JASSM Missile," Lockheed Martin Skunk Works, Engineering Systems Inc. Report No. 6814-1, December 1999.

Kohlman, D.L., Winn, R.C. and Kenner, M.T., "Optimal Wing Design for Top-Fuel Dragsters," AIAA 99-0464, Reno, NV, January 1999.

Kohlman, D.L. and Slane, J.H., "Flight Test Results and Simulator Proof of Match for a UC-12B Aircraft," Training Devices, Inc., Engineering Systems Inc. Report No. 4848-1, November 1998.

Kohlman, D.L. and Winn, R.C., "Analysis of Stability and Performance Changes to the Falcon 50 and Falcon 900 Resulting from Ice Accretion on the Proposed Radome," JetCorp Report No. 13-402R001, 10 September 1998.

Kohlman, David L., "Analysis of Ice Accretion on the Ball Jetvision Radome as Installed on the Gulfstream III and Gulfstream IV Airplanes." Engineering Systems Inc. for Ball Telecommunication Products Division, Report 98120, 27 February 1998.

Kohlman, David L., "Effect of Ice on the Ball Radome on Performance, Stability, and Control of the Gulfstream III and Gulfstream IV Airplanes." Engineering Systems Inc. for Ball Telecommunication Products Division, Report 98110, 27 July 1997.

Kohlman, David L., "Analysis of Ice Accretion on the Ball Jetvision Radome as Installed on the Gulfstream IV Airplane." Engineering Systems Inc. for Ball Telecommunication Products Division, Report 96120, July 1997.

Kohlman, David L., "Effect of Ice on the Ball Radome on Performance, Stability, and Control of the Gulfstream IV," Engineering Systems Inc. for Ball Telecommunication Products Division, Report 96110, June 1997.

Kohlman, D.L. and Winn, R.C., "DC-8 Ejector Icing Analysis," Quiet Nacelle Corporation, Project QNC-2039, November 1996.

Kohlman, D.L. and Winn, R.C., "Analysis of DC-8-61 Controllability with In-Flight Thrust Reverser Deployment," Final Report, Quiet Nacelle Corporation, Project QNC-2032, October 1996.

Winn, R.C. and **Kohlman, D.L.**, "Ejector Ice Shape Prediction," Quiet Nacelle Corporation Project QNC-2106, February 1995.

Winn, R.C. and **Kohlman, D.L.**, "Inlet Ring Thermal Analysis," Quiet Nacelle Corporation Project QNC-2105, December 1994.

Kohlman, David L., "Aerodynamic and Control System Simulator Data for the Learjet Model 35A/36A." Kohlman Aviation Corporation for CTA, Incorporated, 19 October 1994.

Winn, R.C. and **Kohlman, D.L.**, "Ejector Pressure Profile," Quiet Nacelle Corporation Project QNC-2104, September 1994.

Winn, R.C. and **Kohlman, D.L.**, "Analysis and Design of the Anti-Icing System for the Acoustic Ring on the DC-8 Hushkit," Final Report, Quiet Nacelle Corporation, May 1994.

Kohlman, David L. and Bounajem, Elias, "Ground Reaction Model for the Beech King Air C90A," Kohlman Systems Research Report R92-164, 30 September 1992.

Kohlman, David L. and Winger, Stacey L., "Simulated Effect of Icing on the King Air C90A," Kohlman Systems Research Report R92-160, 28 August 1992.

Kohlman, David L. and Rahbarrad, Mahyar, "Flight Evaluation of Several Ground Deicing/Anti-icing Fluids on General Aviation Aircraft." Dept. of Transportation Report DOT/FAA/CT-TN90/31, December 1990.

Kohlman, David L. and Albright, Alan E., "A Method of Predicting Flow Rates Required to Achieve Anti-Icing Performance with a Porous Leading Edge Ice Protection System." NASA Contractor Report 168213, August 1983.

Kohlman, David L., Matsuyama, Garey T., Hawley, Kevin E. and Meredith, Paul T., "A Feasibility Study for Advanced Technology Integration for General Aviation." NASA Contractor Report 159381, November 1980.

Kohlman, David L., "Aerodynamic, Stability and Control Characteristics of the Lockheed Model 1329 Jetstar." Prepared for Atkins & Merrill, Inc., Tulsa, Oklahoma, August 8, 1977.

Kohlman, D.L., Elias, L. and Orlik-Ruckemann, K., "Initial Studies of Low Temperature Ablation in a Helium Hypersonic Wind Tunnel." National Aeronautical Establishment, Canada, Report LTR-UA-7, June 1969, 54 pages. Also published as Sandia Laboratories Report SC-CR-69-3215, January 1971.

Kohlman, D.L. and Roskam, J., "An Analytical Description of Typical Light Airplane Autopilot and Control Systems." Prepared for the Department of Transportation, Transportation Systems Center, Cambridge, Massachusetts, December 14, 1970, 19 pages.

Kohlman, David L. and Richardson, R.W., "An Investigation of the Use of Dry Ice for Ablation Simulation." Sandia Corporation SC-CR-67-2844, November 1967, 47 pages.

Kohlman, David L., Touryan, K.J. and Vaughn, H.R., "Instability Problems of High Performance Re-Entry Vehicles." Sandia Corporation Report SC-TM-66-31, 1966 (Secret).

Kohlman, David L., "A Preliminary Theoretical Interpretation of the Effect of Ablation on Dynamic Stability." Sandia Corporation Report SC-RR-65-483, 1963 (Confidential).

Kohlman, David L., "A Solution of the Longitudinal and Lateral-Directional Small Disturbance Equations of Motion." The Boeing Company, Aerodynamics Technical Note 61-004, 1961, 27 pages.

Kohlman, David L., "A Simple Analysis of Ground Effect on the Lift of a Wing." The Boeing Company, Document D3-3911, 1961, 27 pages.