Missile configuration design.

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Regions
Technical Activities
Standards Committees
Standing Committees

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Applied Aerodynamics Technical References

This page contains a list of recommended technical references that are fundamentally important to the field. Document types include textbooks, reports, and journal articles. The purpose of the list is two-fold: to offer a new worker in applied aerodynamics a list of recommended contents of a personal library, and to facilitate an exchange of favored references between applied aerodynamics practitioners. The list is based on recommendations of members of the AIAA Applied Aerodynamics Technical Committee.

Vehicle Aerodynamics

- **Title:** *Missile Configuration Design*
  - **Author:** S.S. Chin
  - **Format:** Reference
  - **Source:** Out of print. Last reproduced by University Microfilms International, Ann Arbor, Michigan USA, 1986
  - **Comment:** Aerodynamics is given primary emphasis during preliminary configuration design of missiles. The material is slanted primarily towards the aerodynamicist in preliminary design. The book contains a lot of useful "back of the envelope" information.

- **Title:** *Fluid-Dynamic Lift*
  - **Author:** S. F. Hoerner and H.V. Borst
  - **Format:** Reference
  - **Source:** Hoerner Fluid Dynamics, P.O. Box 342, Brick Town, N.J. 08723, 1985
  - **Comment:** Information on lift and its derivatives
Limited Access:
Subsites
HiLiftPW
Aerodynamic Design
Optimization DG
Low Boom DG
Low Reynolds Number Aero Modeling & Test DG
Missile & Projectile Aero-Prediction DG
Rotorcraft Simulation DG
Validation of Numerical Methods DG
Blog

- **Title:** Fluid-Dynamic Drag  
  **Author:** S. F. Hoerner  
  **Format:** Reference  
  **Source:** Hoerner Fluid Dynamics, P.O. Box 342, Brick Town, N.J. 08723, 1965  
  **Comment:** Theoretical, experimental, and statistical information on drag.

- **Title:** Missile Aerodynamics  
  **Author:** Jack N. Nielsen  
  **Format:** Reference  
  **Source:** University Microfilms International Ann Arbor, Ml, 1960, reprinted in 1988 (800-521-0600 or 313-761-4700)  
  **Comment:** The "Bible" of missile aerodynamics.

- **Title:** Lift, and Center of Pressure of Wing-Body-Tail Combinations at Subsonic, Transonic and Supersonic Speeds  
  **Author:** Pitts, William C., Nielsen, Jack N., and Kaattari, George E.  
  **Format:** NACA Report  
  **Source:** NACA Report 1307, 1959  
  **Comment:** The fundamental work behind the "component build-up" method for estimating aircraft aerodynamic characteristics. Contains charts and equations for wing-body and wing-tail interference. This report is the basis for the USAF Datcom and many similar documents and computer codes.

- **Title:** Aerodynamics of V/STOL Flight  
  **Author:** McCormick, Barnes  
  **Format:** Textbook  
  **Source:** Academic Press, 1967  
  **Comment:** Aerodynamics and performance of a variety of propellers, fan-in-wing, augmenter wings, and ground effect machines. Some of the concepts are dated.

- **Title:** Theory of Wing Sections  
  **Author:** Ira H. Abbott and Albert E. von Doenhoff  
  **Format:** Paperback textbook  
  **Source:** Dover Publications, Inc., New York, 1959  
  **Comment:** Data source on 2D airfoil cross sections, including coordinates and force coefficients.

**Flight Dynamics**

- **Title:** Dynamics of Atmospheric Flight  
  **Author:** Bernard Etkin  
  **Format:** Text/reference  
  **Source:** John Wiley and Sons Inc., 1972  
  **Comment:** Good reference for general equations of motion, longitudinal and lateral aerodynamic characteristics, and their effects on stability and control.

- **Title:** Stability and Control of Airplanes and Helicopters  
  **Author:** Seckel, Edward
**Fluid Dynamics**

- **Title:** *The Dynamics and Thermodynamics of Compressible Fluid Flow*, Volumes I and II.
  **Author:** Ascher H. Shapiro
  **Format:** Hardcover textbook
  **Source:** The Ronald Press Company, New York, 1953.
  **Comment:** Certainly one of the most widely used texts on compressible flow.

- **Title:** *Basic Equations of Engineering Science*
  **Author:** William F. Hughes and Eber W. Gaylord
  **Format:** Paperback textbook
  **Source:** Schaum Publishing Co., New York, 1964
  **Comment:** Includes a good source for the Navier-Stokes equations.

- **Title:** *Theoretical Hydrodynamics*
  **Author:** L. M. Milne-Thompson
  **Format:** Hardcover textbook
  **Source:** The Macmillan Company, New York, 3rd ed, 1966
  **Comment:** A good reference on the use of complex variables for fluid flow solutions.

- **Title:** *Shape and Flow (The Fluid Dynamics of Drag)*
  **Author:** Ascher H. Shapiro
  **Format:** Paperback
  **Source:** Doubleday & Company, Inc., New York, 1961
  **Comment:** A nonmathematical introduction to fluid flow including many photographs visualizing fluid effects.

- **Title:** *Elements of Hypersonic Aerodynamics*
  **Author:** R. N. Cox and L. F. Crabree
  **Format:** Hardcover textbook
  **Source:** The English Universities Press LTD, London, 1966
  **Comment:** Most of the basic analytical methods for hypersonic flow.

- **Title:** *Computational Fluid Mechanics and Heat Transfer*
  **Author:** John C. Tannehill, Dale A. Anderson, and Richard H. Pletcher
  **Format:** Hardcover textbook
  **Source:** Taylor & Francis, Washington, 2nd ed, 1997
  **Comment:** The text on CFD.

- **Title:** *Equations, Tables, and Charts for Compressible Flow*
  **Author:** Ames Research Staff
• Title: *Convective Heat and Mass Transfer*  
  **Author:** William M. Kays and Michael E. Crawford  
  **Format:** Hardcover textbook  
  **Source:** McGraw-Hill Book Company, New York, 2nd ed., 1980  
  **Comment:** A practical and readable source for many of the equations of fluid dynamics. Includes analytical and empirical results.

• Title: *Viscous Fluid Flow*  
  **Author:** Frank Mangrem White  
  **Format:** Hardcover textbook  
  **Source:** McGraw-Hill Book Company, New York, 1974  
  **Comment:** One of the most readable textbooks on fluid dynamics in existence.

• Title: *Applied Fluid Dynamics Handbook*  
  **Author:** Robert D. Blevins  
  **Format:** Hardcover textbook  
  **Source:** Van Nostrand Reinhold Company, New York, 1984  
  **Comment:** A large compilation of empirical data on fluid dynamics, including drag coefficients, total pressure loss coefficients, discharge coefficients, wake shear-layer spreading, atmospheric properties, porous media, and data on bearings and seals.

• Title: *Boundary Layer Theory*  
  **Author:** Hermann Schlichting  
  **Format:** Hardcover textbook  
  **Source:** McGraw-Hill Book Company, New York, 7th ed., 1979  
  **Comment:**

• Title: *Gas Dynamics*  
  **Author:** Maurice J. Zucrow and Joe D. Hoffman  
  **Format:** Text/reference  
  **Source:** John Wiley and Sons, Inc., 1976  
  **Comment:** Covers the basics of gas dynamics. Includes the derivation of governing equations and lots of examples.

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To make comments or additional recommendations, please send an email to Jim Guglielmo at james.j.guglielmo@boeing.com. Recommendations should include the following information (the “Comment” is optional):

**Title:**

**Author:**

**Format:** e.g., textbook, report, journal article, ...

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