## IN THIS ISSUE ...

Increasing Spectrum Use	1
Interference Control	6
In-Flight Simulators	10
Vehicular Positioning System	17
Aided Inertial Navigation	20
Message from the AESS President	27
EASCON '86	29
AESS Panel Award	30
The Electric Washer	31

## ABOUT THE COVER ...

Top Left:	$6\frac{1}{2}$ lb. ultra-low sidelobe antenna for solid-state low pulse power radar.
Top Right:	$K_A$ -Band printed circuit antenna for smart munitions that will withstand 10,000 g's.
Bottom:	Helicopter tail-rotor assembly (double exposure) used for development of blade spectral signatures.
All From:	Proceedings of IEEE 1986 National Radar Conference being held this month—sponsored by your society.



## IEEE AEROSPACE AND ELECTRONIC SYSTEMS SOCIETY

The Aerospace and Electronic Systems Society is a society, within the framework of the IEEE, of members with professional interests in the organization, design, development, integration and operation of functional systems for space, air, ocean or ground environments. These systems include, but are not limited to, navigation, avionics, spacecraft, aerospace power, radar, sonar, telemetry, defense, transportation, and command and control. All members of the IEEE are eligible for membership in the Society and will receive this *Magazine* and the *Transactions* upon payment of the annual Society membership fee. *The Society Board of Governors, Organization, and its Committees will be found on cover 3*.

EDITOR-IN-CHIEF	Lee D. Dickey	1615 White Way Drive, Arlington, TX 76013, (817) 277-9992
ASSISTANT EDITOR—AESS Affairs	Joseph F. Kasper	TASC, 8301 Greensboro Dr., Ste 1000, McLean, VA 22102, (703) 734-4100 x262
ADMINISTRATIVE EDITOR	David B. Dobson	6411 Chillum Place, NW, Washington, DC 20012, (202) 722-2246
CONTRIBUTING EDITORS Careers. Patents Military Systems New Horizons Research & Publications USAB	Don C. Friedmann Ben J. Goldfarb Rick Kenefic Paul J. Nahin Steven Riter John J. Kelleher	4220 Falstaff Road, Baltimore, MD 21215, (301) 859-6007 1001 Playford Lane, Silver Spring, MD 20901 4603 Aboite Lake Drive, Ft. Wayne, IN 46804, (219) 429-5825 Dept. EE, Kingsbury Hall, Univ. NH, Durham NH 03824, (603) 862-1357 Dept. EE, Univ. Texas at El Paso, El Paso, TX 79902 3717 King Arthur Road, Annandale, VA 22003, (703) 560-4438
EDITOR EMERITUS	Ben J. Goldfarb	1001 Playford Lane, Silver Spring, MD 20901

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC. -

Bruno O. Weinschel, President	Cyril J. Tunis, Vice President, Educational Activities
Henry L. Bachman, President-Elect	Carleton A. Bayless, Vice President, Professional Activities
Charles A. Eldon, Past President	Charles H. House, Vice President, Publication Activities
Emerson W. Pugh, Executive Vice President	Dennis Bodson, Vice President, Regional Activities
Michiyuki Uenohara, Secretary	John E. May, Director, Standards Activities
Edward J. Doyle, Treasurer	Merlin G. Smith, Vice President, Technical Activities
HEADQUARTERS STAFF Eric Herz, Executive Director and General Manager Elwood K. Gannett, Deputy General Manager Thomas W. Bartlett, Controller Donald Christiansen, Editor of IEEE Spectrum Thomas C. White, Public Information Charles F. Stewart, Jr., Staff Director, Administration Services	John F. Wilhelm, Staff Director, Educational Services Donald L. Suppers, Staff Director, Field Services Leo Fanning, Staff Director, Professional Activities David L. Staiger, Staff Director, Publishing Services Sava I. Sherr, Staff Director, Standards Services Irving Engelson, Staff Director, Technical Activities

**IEEE AEROSPACE AND ELECTRONIC SYSTEMS MAGAZINE**: is published monthly by The Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, NY 10017. Responsibility for the contents rests upon the authors and not upon the IEEE, the Society, or its members. IEEE Service Center (for orders, subscriptions, address changes): 445 Hoes Lane, Piscataway, N.J. 08854. Telephones: Headquarters 212-705 + extension: Information—7900, General Manager—7910, Controller—7748, Educational Services—7860, Publishing Services—7560. Region/Section Services—7751, Technical Services—7800, IEEE Service Center (20) 981-0060. Washington Office/Professional Services(202) 785-0017. NY Telecopier No. (212) 752-492. Tetex No. 236-411 (International messages only). This Journal is available in either microfiche or printed form. Additional copies may be purchased at \$3.00 (first copy only) by IEEE members and \$6.00 per copy by nonmembers. Annual subscription price: IEEE members, dues plus Society fee. Price for nonmembers available in request. COPYRIGHT AND REPRINT PERMISSIONS: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limits to 20. Copyright leave provide the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 20 Congress St., Salem, MA 01970, (2) pre-1978 articles without fee. Instructors are permitted to photocopy isolated articles for noncommercial classroom use without fee. For other copying, reprint or republication permission, write to the Director of Publishing services at IEEE Headquarters. All right reserved. Copyright © 1986 by The Institute of Electronic Systems Society, IEEE, 445 Hoes Lane, Piscataway, NJ 08854. This publication material to and thress changes to IEEE Aerospace and Electronic Systems Society, Newsetter (USPS 212-660) which was distributed to members only. Back copies of these issues are not available.