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GLOBAL POSITIONING SYSTEM BIBLIOGRAPHY

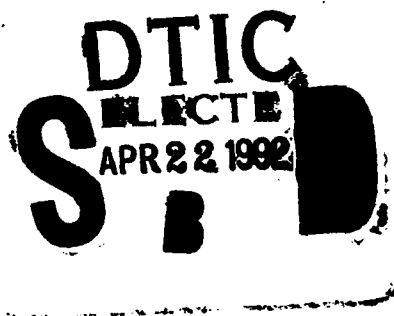
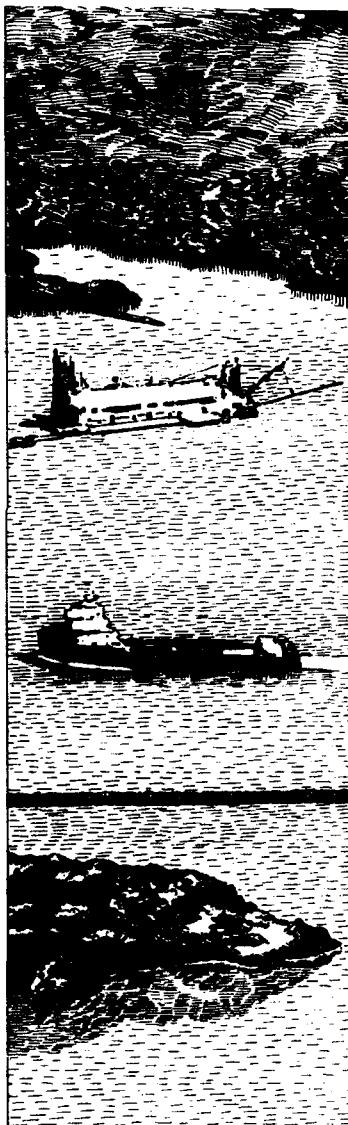
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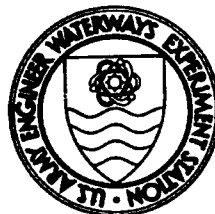
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PREFACE

This bibliography was prepared under Work Unit 32479, Dynamic Positioning Systems, of the Dredging Research Program (DRP). The DRP is managed by the Coastal Engineering Research Center (CERC), U.S. Army Engineer Waterways Experiment Station. Technical Monitors for Headquarters, U.S. Army Corps of Engineers were Messrs. Robert H. Campbell, Glenn Drummond, Gerald Greener, Barry W. Holliday, David Mathis, and M. K. Miles. The U.S. Army Topographic Engineering Center (TEC), formerly called the U.S. Army Engineer Topographic Laboratories, was responsible for monitoring and technically reviewing actions associated with this work unit. The TEC Principal Investigator was Mr. Stephen R. DeLoach, Chief, Precise Survey Branch, Surveying Division, Topographic Developments Laboratory.

Mr. E. Clark McNair, Jr., CERC, is Manager of the DRP; Dr. Lyndell Z. Hales, CERC, is Assistant Manager. Dr. James R. Houston and Mr. Charles C. Calhoun, Jr., are Chief and Assistant Chief of CERC, respectively. This work was performed under DRP Technical Area 4, Vessel Positioning, Survey Controls, and Dredge Monitoring Systems, which is managed by Mr. George P. (Pat) Bonner, Instrumentation Services Division, WES.

The actual compilation effort was effected through the U.S. Army Research Office's "Scientific Services Program," under Contract DAAL03-86-D-0001, Task Control Number 88-523, Delivery Order Number 1222. Work on the delivery order was performed 8 November 1988 through 29 March 1989. Mr. DeLoach acted as the Contracting Officer's Technical Representative during the period of this contract. Final technical review was performed by the TEC Surveying Division. The TEC's Scientific and Technical Information Center assisted in the review process. Mr. A. C. Elser was Chief of the Surveying Division and Mr. Eugene P. Griffin was Chief of the Topographic Developments Laboratory during this period.

Colonel David F. Maune, CE, was Commander and Director, and Mr. Walter E. Boge was Technical Director of the TEC during report preparation. Dr. Robert W. Whalin was Director of WES. COL Leonard G. Hassell, EN, was Commander and Deputy Director.

For additional information on this work, contact Mr. Carl Lanigan at (703) 355-2752 or Mr. E. Clark McNair, Jr., at (601) 634-2070.



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SUMMARY

This document contains a list of all known individuals, institutions, and industries performing exploratory research and development in high-precision dynamic surveying with the Global Positioning system before March 1989.

GPS Bibliography

INTRODUCTION

This bibliography was prepared to supplement Technical Report DRP-92-1, "Kinematic Differential Global Positioning System," by David Wells and Alfred Kleusberg of the University of New Brunswick. The bibliography represents a current (as of March 1989) and comprehensive listing of publications and papers dealing with the Global Positioning System.

Aarons, J., H. E. Whitney, and R. S. Allen (1971). "Global morphology of ionospheric scintillations." *Proceedings of the IEEE*, February, pp. 159-172.

Abbott, R. I., P. J. Cefola, and S. F. Tse (1983). "Satellite orbit theory for a small computer." In: *AAS/AISS Astrodynamics Specialist Conference*, Lake Placid, N.Y., August, AAS Publications Office, San Diego, Calif., Paper 83-360.

Abbott, R. I., Y. Bock, C. C. Counselman, and R. W. King (1986). "GPS orbit determination." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. I, pp. 271-274.

Abbot, R. I., Y. Bock, C. C. Counselman, R. W. King, S. A. Gourevitch, and B. J. Rosen (1985). "Interferometric determination of GPS satellite orbits." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 63-72.

Abdullah, K. A. (1984). "Ionospheric correction of single frequency GPS data using electron content derived from simultaneous Transit observations." M.Eng. Report, Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B.

Abidin, H. Z. (1988). "Real-time marine differential kinematic GPS— Comparison of positioning methods." *Proceedings of The Institute of Navigation Satellite Division Student Paper Competition*, Colorado Springs, Colo., 23 September, The Institute of Navigation, Washington, D.C., pp. 1-22.

Abusali, P. A. M., B. E. Schutz, B. D. Tapley, and C. S. Ho (1986). "Determination of GPS orbits and analysis of results." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Austin, Tex., Vol. I, pp. 355-364.

Ackermann, F. (1984). "Utilization of navigation data for aerial triangulation." *International Archives of Photogrammetry and Remote Sensing*, Vol. XXV, No. A3a, pp. 1-9.

Ackermann, F. (1986). "The use of camera orientation data in photogrammetry — A review." *International Archives of Photogrammetry and Remote Sensing, Proceedings, ISPRS Symposium*, Stuttgart, F.R.G., 1-5 September, ESA, SP-252, Vol. 26, pp. 93-99.

Aggarwal, A. K. (1988). "EURONAV™—A state of the art military GPS receiver." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 153-164.

Ajayi, G. O., A. Hedberg, and G. Hamberg (1980). "Accurate determination of ionospheric effects on satellite-based positioning systems in terms of residual range error." *Radio Science*, Vol. 15, No. 5, pp. 1009-1016.

Al-Kadi, I. (1989). "Selection of GPS receiver for survey applications." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 111-120.

Allison, M. T., and P. Daly (1985). "An alternative concept for the design of a low cost C/A-code NAVSTAR GPS receiver." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 127-134.

Allison, T., R. Eschenbach, R. Hyatt, and B. Westfall (1988). "C/A code dual frequency surveying receiver, architecture and performance." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 434-441.

- Alshammari, A. A. (1986). "Comparison between Doppler and GPS systems." *Proceedings of the ASCM-ASPRS annual convention on Surveying, Instrumentation, and the Global Positioning System*, Washington, D.C., March, Vol. 2, pp. 226-235.
- Ambrose, M. (1984). "Worldwide air navigation costs/benefits and payments." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 33-53. Also in *The (U.K.) Journal of Navigation*, Vol. 37, No. 3, pp. 316-324.
- Ananda, M. P., H. Bernstein, W. A. Feess, and T. C. Paugstat (1988). "Global Positioning System (GPS) autonomous user system." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 2, pp. 197-216.
- Anderle, R. J. (1978). "Geodetic applications of the NAVSTAR Global Positioning System." *Proceedings of the Second International Symposium on Problems Related to the Redefinition of North American Geodetic Networks*, Arlington, Va., April, pp. 463-480.
- Anderle, R. J. (1979). "Geodetic applications of the NAVSTAR Global Positioning System." *Proceedings of the Second International Symposium on the Use of Artificial Satellites for Geodesy and Geodynamics*, Eds. G. Veis and E. Livieratos, Athens, Greece, 29 May-2 June 1978, The National Technical University, Athens, Greece, Vol. II, pp. 117-140.
- Anderle, R. J. (1979). "Accuracy of geodetic solutions based on Doppler measurements of the NAVSTAR Global Positioning System satellites." *Bulletin Géodésique*, Vol. 53, No. 2, pp. 109-116.
- Anderle, R. J. (1979). "Advanced satellite systems and their applications." Paper presented at the XVII General Assembly of the International Union of Geodesy and Geophysics, Canberra, Australia, December.
- Anderle, R. J. (1980). "Application of NAVSTAR GPS geodetic receiver to geodesy and geodynamics." Naval Surface Weapons Center TR 80-282, Dahlgren, Va.
- Anderle, R. J. (1984). "Prospects for Global Positioning System." Preprint of invited paper presented at the Spring Meeting of the AGU, Cincinnati, Ohio, 14-17 May.
- Anderle, R. J. (1988). "Transition from NAVSAT to GPS geodesy." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 11-22.
- Anderle, R. J., and A. G. Evans (1982). "Relative positioning test using the Global Positioning System and Doppler techniques." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1061-1078.
- Anderson, L. A. (1985). "GPS accuracy while surveying arrays of deep ocean transponders." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 473-482.
- Anderson, E. G., and P. E. Kent (1984). "Distress and safety." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 245-250.
- Angus-Leppan, P. V. (1982). "The Global Positioning System and its implications for geodetic networks." School of Surveying, University of New South Wales, Sydney, N.S.W., Australia.
- Anodina, T. G. (1988). "Global Positioning System GLONASS." Presented at: Special Committee on Future Air Navigation Systems (FANS) fourth meeting, May, Montreal, Québec, working paper 70, 17 pp.
- anon. (n.d.). "Indicators of precision." 10 pp.
- anon. (?). "TI 4100 GPS geodetic relative positioning of VLB1-established baselines." 10 pp.
- anon. (1985). "Potential operators of position locating satellites file plans." *Aviation Week & Space Technology*, 3 June, pp. 371-379.
- anon. (1986?). "Evolution of GPS baseline determination: A brief historical sketch."
- anon. (1986). "FCC resolves issue of satellite position fixing technology." *Aviation Week & Space Technology*, Vol. 124, No. 24, p. 115.
- anon. (1989). "Applications and experiences with GPS: Technical seminar held on 13 October 1988, London, U.K." *The Hydrographic Journal*, January, No. 51, pp. 54-59.

- Ashjaee, J. (1985). "GPS Doppler processing for precise positioning in dynamic applications." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 4, pp. 370-385. Also in *Global Positioning System, Papers published in Navigation* reprinted by The Institute of Navigation, 1986, Vol. III, pp. 54-69.
- Ashjaee, J. M. (1985). "Improving the accuracy of C/A-code systems." *Proceedings of the National Technical Meeting*, San Diego, Calif., 15-17 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 92-100.
- Ashjaee, J. (1985). "New results on the accuracy of C/A code GPS receivers." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 207-214.
- Ashjaee, J. (1986). "GPS receiver technologies." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wa., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 99-105.
- Ashjaee, J. (1986). "IC² technique for GPS signal processing in survey applications." *Proceedings of the FIG XVIII International Congress of Surveyors*, Toronto, Ontario, June, pp. 295-309. Paper Commission 5.
- Ashjaee, J. (1986). "ICGPS signal processing in survey applications." *Proceedings of the ACSM-ASPRS annual convention on Surveying, Instrumentation, and the Global Positioning System*, Washington, D.C., March, Vol. 2, pp. 236-248.
- Ashjaee, J. (1986). "On precision of C/A code." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 214-218.
- Ashjaee, J. (1986). "Real time first order survey with GPS single frequency C/A code." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Austin, Tex., Vol. I, pp. 489-502.
- Ashjaee, J. M. (1988). "Differential GPS with ASHTECH XII." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 318-323.
- Ashjaee, J. (1988). "Precision survey with Ashtech XII, the all-in-one, all-in-view." Preprint: Ashtech Inc, Sunnyvale, Calif., 14 pp.
- Ashjaee, J. M., and R. J. Helkey (1984). "Precise positioning using a 4-channel C/A code GPS receiver." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 236-244.
- Ashjaee, J., R. Eschenbach, and R. Helkey (1984). "C/A code receivers for precise positioning applications." Presented at: 40th Annual Meeting of The (U.S.) Institute of Navigation, June, Cambridge, Mass., 6 pp.
- Ashjaee, J. M., D. R. Bourne, R. J. Helkey, R. G. Lorenz, J. B. Minazio, B. W. Remondi, and R. R. Sutherland (1988). "Ashtech XII GPS receiver, the all-in-one all-in-view." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 7 pp. Also in *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 426-433.
- Ashkenazi, V. (1986). "Coordinate systems: How to get your position very precise and completely wrong." *The (U.K.) Journal of Navigation*, Vol. 39, No. 2, pp. 269-278.
- Ashkenazi, V. (1986). "Precise static and dynamic positioning by GPS." *Hydro'86, Proceedings of the 5th Biennial International Symposium of the Hydrographic Society*, University of Southampton, England, December, pp. 11A.1-11A.8.
- Ashkenazi, V., and P. Diederich (1985). "Positioning by second generation satellites: GPS and NAVSAT." *The (U.K.) Hydrographic Journal*, No. 35, pp. 17-21.
- Ashkenazi, V., and T. Moore (1986). "The navigation of navigation satellites." *The (U.K.) Journal of Navigation*, Vol. 39, No. 3, pp. 377-393.
- Ashkenazi, V., and J. Yau (1986). "Significance of discrepancies in the processing of GPS data with different algorithms." *Bulletin Géodésique*, Vol. 60, No. 3, pp. 229-240. Also in *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, University of Texas at Austin, Austin, Tex., 18 April-2 May, Vol. I, pp. 689-704.
- Ashkenazi, V., L. G. Agrotis, and J. H. Yau (1985). "GPS interferometric phase algorithms." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 299-314.
- Ashkenazi, V., C. de la Fuente, and T. Moore (1988). "GPS at Nottingham University." *Journal of Surveying Engineering*, November, Vol. 114, No. 4, pp. 146-155.
- Atwater, H. A. (1974). "The electromagnetic field in rotating coordinate frames." *Proceedings of the IEEE*, February, pp. 316-318.

- Axelrad, P., and J. F. Kelley (1986). "Near earth orbit determination and rendezvous navigation using GPS." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 184-191.
- Axelrad, P., and B. W. Parkinson (1988). "Closed loop navigation and guidance for gravity probe B orbit insertion." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 10 pp.
- Baba, Y. (1985). "The present status and the plan of geodetic applications of space technology including the Global Positioning System in Japan." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 863-872.
- Baker, P. (1984). "The Global Positioning System (GPS) DoD policy issues." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 46-50.
- Baker, P. J. (1986). "Global Positioning System (GPS) policy." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. I, pp. 51-64.
- Baker, P. J. (1987). "GPS in the year 2000 and beyond." *The (U.K.) Journal of Navigation*, Vol. 40, No. 2, pp. 175-182.
- Baker, P., and F. Zedeck (1985). "Civil use of the Global Positioning System precision positioning signal." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 33-36.
- Bangert, J. A. (1986). "The DMA/GPS earth orientation prediction service." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. I, pp. 151-164.
- Barrell, H. (1951). "The dispersion of air between 2500A and 6500A." *Journal of the Optical Society of America*, May, Vol. 41, No. 5, pp. 295-299.
- Bartholomew, C. A. (1979). "Clocks: Evolution of frequency standards." In: *Principles and Operational Aspects of Precision Position Determination Systems*, Ed. C.T. Leondes, NATO AGARDograph No. 245, pp. 7-1 to 7-11.
- Bartholomew, C. A. (1980). "Satellite frequency standards." In: *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. I, pp. 21-28.
- Bartholomew, T. R. (1986). "GPS instrumentation for marine applications in the National Ocean Service." *Proceedings of the ACSM-ASPRS annual convention on Surveying, Instrumentation, and the Global Positioning System*, Washington, D.C., March, Vol. 2, pp. 297-301.
- Bauersima, I. (1982). "NAVSTAR Global Positioning System (GPS), I." *Mitteilungen der Satellitenbeobachtungsstation Zimmerwald*, Nr. 7. Astronomical Institute, University of Berne, Switzerland.
- Bauersima, I. (1983a). "NAVSTAR Global Positioning System (GPS), II." *Mitteilungen der Satellitenbeobachtungsstation Zimmerwald*, Nr. 10. Astronomical Institute, University of Berne, Switzerland.
- Bauersima, I. (1983b). "NAVSTAR Global Positioning System (GPS), III: Erdvermessung durch radio-interferometrische Satellitenbeobachtungen." *Mitteilungen der Satellitenbeobachtungsstation Zimmerwald*, Nr. 12. Astronomical Institute, University of Berne, Switzerland. Also Defense Mapping Agency Aerospace Center Technical Translation DMAAC-TC-3643, translated by J.M. Willis as 'Earth measurement by means of radio interferometric satellite observations,' November, 1984.
- Bean, B. R. (1962). "The radio refractive index of air." *Proceedings of the IRE*, March, pp. 260-273.
- Beck, N. (1985). "Practical aspects of satellite positioning." Presented at seminar on Impact of GPS on Surveying Practice in Ontario, Erindale College, Mississauga, Ontario, November.
- Beck, N., J. R. Duval, and P. T. Taylor (1988). "GPS versus precise trilateration — Comparison of various processing approaches." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 27 pp.

- Beck, N., P. Héroux, and G. Lachapelle (1983). "Evaluation of NAVSTAR integrated with speed log and gyro for navigation in offshore eastern Canada during 1982." Nortech Surveys (Canada) Inc. report, Calgary, Alberta, February.
- Beck, N., D. Delikaraoglou, K. Lochhead, D. J. McArthur, and G. Lachapelle (1984). "Preliminary results on the use of differential GPS positioning for geodetic applications." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 162-168.
- Becker, W. J. (1973). "Comments on Air Force requirements and the Global Positioning System." *Proceedings of the ION National Radio Navigation Symposium*, Washington, D.C., 13-15 November, pp. 31-32.
- Beier, W. (1985). "The C/A-code GPS receiver for navigation." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 1, pp. 241-256.
- Bell, J. (1984). "Navigation for everyman, and his bomb." *New Scientist*, 11 October, pp. 36-40.
- Bender, E. (1979). "NAVSTAR passes sea trials." *Sea Technology*, March, pp. 29-30.
- Bender, P. L. (1979). "Establishment of terrestrial reference frames by new observational techniques." *Reference Coordinate Systems for Earth Dynamics*, Proceedings of IAU Colloquium No. 56, Warsaw, Poland, September, pp. 23-36.
- Bender, P. L., and D. R. Larden (1982). "TOPEX orbit determination using GPS signals plus a sidetone ranging system." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1253-1258.
- Bender, P. L., and D. R. Larden (1985). "GPS carrier phase ambiguity resolution over long baselines." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 357-362.
- Berquist, H. E. (1988). "Mission planning in GPS surveying." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 9 pp. To be published in *Journal of Surveying Engineering*.
- Bertiger, W. I. (1988). "GPS-based system for satellite tracking and geodesy." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 7 pp.
- Bertiger, W., S. M. Lichten, and E. C. Katsigris (1988). "A demonstration of sub-meter GPS orbit determination and high precision user positioning." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, 29 November-2 December, Orlando, Fla., pp. 185-194.
- Beser, J. (1986). "Highly accurate hydrographic surveys using differential GPS." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 169-176.
- Beser, J., and B. W. Parkinson (1982). "The application of NAVSTAR differential GPS in the civilian community." *Navigation, Journal of The (U.S.) Institute of Navigation*, Summer, Vol. 29, No. 2, pp. 107-136. Also in *Proceedings of the Thirty-Seventh Annual Meeting of The (U.S.) Institute of Navigation*, Annapolis, Md., 9-11 June, pp. 60-74. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. II, 1984, pp. 167-196.
- Beutler, G. (1984). "GPS carrier phase difference observation software." Department of Surveying Engineering Technical Memorandum TM-2, University of New Brunswick, Fredericton, N.B.
- Beutler, G., and W. Gurtner (1987). "The influence of atmospheric refraction on the evaluation of GPS phase observations." Bericht Nr. 16, April, Satellitenbeobachtungsstation Zimmerwald, 9 pp.
- Beutler, G., and R. B. Langley (1985). "The summer 1984 GPS and VLBI campaigns in Alaska and the Canadian territories: Baseline comparisons." Presented at: NASA Crustal Dynamics Project Investigators' Meeting, October, GSFC, Greenbelt, Md.
- Beutler, G., W. Gurtner, I. Bauersima, and R. Langley (1985). "Modelling and estimating the orbits of GPS satellites." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 99-112.

- Beutler, G., W. Gurtner, J. Bauersima, and M. Rothacher (1986). "Efficient computation of the inverse of the covariance matrix of simultaneous GPS carrier phase difference observations." *Manuscripta Geodetica*, Vol. 11, No. 4, pp. 249-255.
- Beutler, G., I. Bauersima, W. Gurtner, M. Rothacher, and T. Schildknecht (1988). "Static positioning with the Global Positioning System (GPS): State of the art." Presented at: International GPS Workshop, 10-13 April, Darmstadt, F.R.G., 20 pp.
- Beutler, G., W. Gurtner, M. Rothacher, T. Schildknecht, and I. Bauersima (1986). "Determination of GPS orbits using double difference carrier phase observations from regional networks." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, University of Texas at Austin, Austin, Tex., 28 April-2 May, Vol. I, pp. 319-336. Also in *Bulletin Géodésique*, Vol. 60, No. 3, pp. 205-220.
- Beutler, G., W. Gurtner, M. Rothacher, T. Schildknecht, and I. Bauersima (1986). "Evaluation of the March 1985 HPBL test: Fiducial point concept versus free network solutions." Presented at: AGU Fall Meeting, San Francisco, Calif., 13 pp.
- Beutler, G., W. Gurtner, M. Rothacher, T. Schildknecht, and I. Bauersima (1986). "Using the Global Positioning System (GPS) for high precision geodetic surveys: Highlights and problem areas." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 243-250.
- Beutler, G., I. Bauersima, S. Botton, W. Gurtner, M. Rothacher, and T. Schildknecht (1987). "Accuracy and biases in the geodetic application of the Global Positioning System." In: GPS Papers Presented by the Astronomical Institute of the University of Berne in 1987, Ed. W. Gurtner, *Mitteilungen der Satellitenbeobachtungsstation Zimmerwald*, Nr. 22, University of Berne, Switzerland, 18 pp.
- Beutler, G., I. Bauersima, W. Gurtner, M. Rothacher, T. Schildknecht, and A. Geiger (1987). "Atmospheric refraction and other important biases in GPS carrier phase observations." In: GPS Papers Presented by the Astronomical Institute of the University of Berne in 1987, Ed. W. Gurtner, *Mitteilungen der Satellitenbeobachtungsstation Zimmerwald*, Nr. 22, University of Berne, Switzerland, 26 pp.
- Beutler, G., D. Davidson, R. Langley, R. Santerre, P. Vaníček, and D. Wells (1984). "Some theoretical and practical aspects of geodetic positioning using carrier phase difference observations of GPS satellites." July, Department of Surveying Engineering Technical Report No. 109, University of New Brunswick, Fredericton, N.B.
- Beutler, G., W. Gurtner, U. Hugentobler, M. Rothacher, T. Schildknecht, and U. Wild (1988?). "Ionosphere and GPS processing techniques." Astronomical Institute, University of Berne, Berne, Switzerland, 38 pp.
- Beutler, G., M. D. Abell, I. Bauersima, W. Gurtner, G. L. Mader, M. Rothacher, and T. Schildknecht (1986?). "Evaluation of the 1984 Alaska GPS campaign with the Bernese GPS software." 18 pp.
- Beutler, G., D. A. Davidson, R. B. Langley, R. Santerre, H. D. Valliant, P. Vaníček, and D. E. Wells (1984). "The Ottawa Macrometer™ experiment: An independent analysis." Presented at: 11th Annual Meeting of the Canadian Geophysical Union, May, Halifax, N.S.
- Birmingham, W. P., B. L. Miller, and W. L. Stein (1983). "Experimental results of using the GPS for Landsat 4 onboard navigation." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 30, No. 3, pp. 244-251. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 231-238.
- Bishop, G. J., J. A. Klobuchar, and P. H. Doherty (1985). "Multipath effects on the determination of absolute ionospheric time delay from GPS signals." *Radio Science*, Vol. 20, No. 3, pp. 388-396.
- Bittencourt de Andrade, J. (1985). "Transformation between geodetic reference systems without height information." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 723-730.
- Bjerhammar, A. (1985). "On a relativistic geodesy." *Bulletin Géodésique*, Vol. 59, No. 3, pp. 207-220.
- Black, H. D. (1981). "Satellites for earth surveying and ocean navigating." *Johns Hopkins APL Technical Digest*, Vol. 2, No. 1, pp. 3-13.
- Blackwell, E. G. (1985). "Overview of differential GPS methods." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 2, pp. 114-125. Also in *Global Positioning System*, Papers published in *Navigation*, reprinted by The Institute of Navigation, 1986, Vol. III, pp. 89-100.

- Blair, B. R. (1988). "Using GPS—A multimedia presentation." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 32 pp. To be published in *Journal of Surveying Engineering*.
- Blanchard, W. F. (1986). "The plain navigator's guide to GPS." *Navigation News*, July, Vol. 1, No. 4, pp. 28-32.
- Blanchard, W. F. (1986). "When Satnav can be a problem." *Navigation News*, Nov/Dec, Vol. 1, No. 6, pp. 8.
- Blanchard, W. F. (1987). "Practicalities and prospects on way to Buck Rogers wristwatch GPS." *Navigation News*, Vol. 2, No. 2, p. 32.
- Blank, R. W., and W. D. Rhodes (1986). "Field test results prove GPS performance and utility." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 287-296.
- Blankenburgh, J. C., R. Ekseth, T. Hals, and S. Holte (1985). "Results from GPS—Research projects in Norway." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 413-422.
- Blankshain, K. M. (1988). "Accurate tracking of high dynamic vehicles with translated GPS." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 6 pp.
- Bletzacker, F. R. (1985). "Reduction of multipath contamination in a geodetic GPS receiver." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, April, Rockville, Md., Vol. I, pp. 413-422.
- Bock, Y., and J. W. Ladd (1989). "Simultaneous orbit and network adjustment in Tennessee." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 34-45.
- Bock, Y., R. I. Abbot, C. C. Counselman, and R. W. King (1986). "A demonstration of 1-2 parts 10^7 accuracy using GPS." *Bulletin Géodésique*, Vol. 60, No. 3, pp. 241-254.
- Bock, Y., R. I. Abbot, C. C. Counselman, S. A. Gourevitch, and R. W. King (1985). "Establishment of three-dimensional geodetic control by interferometry with the Global Positioning System." *Journal of Geophysical Research*, Vol. 90, No. B9, pp. 7689-7704.
- Bock, Y., R. I. Abbot, C. C. Counselman, R. W. King, and S. A. Gourevitch (1985). "Three-dimensional geodetic control by interferometry with GPS: Processing of GPS phase observables." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 255-262.
- Bock, Y., S. A. Gourevitch, C. C. Counselman, R. W. King, and R. I. Abbot (1986). "Interferometric analysis of GPS phase observations." *Manuscripta Geodetica*, Vol. 11, No. 4, pp. 282-288.
- Bock, Y., R. I. Abbot, C. C. Counselman, R. W. King, and A. R. Paradis (1986). "Processing of GPS phase observables in the network mode." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 767-768.
- Bock, Y., R. I. Abbot, C. C. Counselman, S. A. Gourevitch, R. W. King, and A. R. Paradis (1984). "Geodetic accuracy of the Macrometer Model V-1000." *Bulletin Géodésique*, Vol. 58, No. 2, pp. 211-221. Also presented at XVIII General Assembly of the IUGG, IAG Symposium d, Hamburg, F.R.G., August 1983.
- Bogusch, R. L., F. W. Guigliano, D. L. Knepp, and A. H. Michelet (1981). "Frequency selective propagation effects spread-spectrum receiver tracking." *Proceedings of the IEEE*, Vol. 69, No. 7, pp. 787-796.
- Boldyrev, V. S., G. I. Moskvina, and V. A. Sorochinsky (1988). "Satellite navigation system GLONASS." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Spring, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 8 pp.
- Book, S. A., W. F. Brady, and P. K. Mazaika (1980). "The non-uniform GPS constellation." *PLANS'80, Proceedings of IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 1-8.
- Booker, H. G. (1977). "Fitting of multi-region ionospheric profiles of electron density by a single analytic function of height." *Journal of Atmospheric and Terrestrial Physics*, Vol. 39, pp. 619-623.

- Borcherding, K. F., and D. Bultmann (1988). "Differential GPS-tests with L1 C/A-code receivers." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 6 pp.
- Border, J. S. (1987). "Integration of trajectories." Presented at: Second GPS Technology Workshop, 23 March, Jet Propulsion Laboratory, Pasadena, Calif.
- Borel, M. J., J. N. Damoulakis, D. R. Delzer, T. D. Fuchser, J. H. Hinderer, C. R. Johnson, and D. J. Pinkos (1979). "Texas Instruments Phase I GPS user equipment." In: *Principles and Operational Aspects of Precision Position Determination Systems*, NATO AGARDograph No. 245, Ed. C.T. Leondes, pp. 15-1 to 15-15. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. I, 1980, pp. 87-102.
- Borutta, H., and H. Heister (1985). "Optimal design for GPS 3-D differential positioning." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität Bundeswehr München, Heft 20-2, Vol. 1, pp. 257-276.
- Bose, S. C. (1986). "GPS/PLRS aided inertial land navigation system performance." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wa., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 111-119. Also in *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 496-504.
- Bossler, J. D. (1981). "A note on Global Positioning System activities." *American Congress on Surveying and Mapping Bulletin*, No. 74, August, pp. 39-40.
- Bossler, J. D. (1983). "The impact of VLBI and GPS on geodesy." *EOS, Transactions, American Geophysical Union*, Vol. 64, No. 39, pp. 569-570.
- Bossler, J. D., and C. W. Challstrom (1985). "GPS instrumentation and federal policy." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 1-10.
- Bossler, J. D., and R. H. Hanson (1984). "The impact of VLBI and GPS on geodesy." *Surveying and Mapping*, Vol. 44, No. 2, pp. 105-113.
- Bossler, J. D., and W. E. Strange (1982). "Summary of GPS geodetic hardware concepts." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1057-1060.
- Bossler, J. D., C. C. Goad, and P. L. Bender (1980). "Using the Global Positioning System (GPS) for geodetic positioning." *Bulletin Géodésique*, Vol. 54, No. 4, pp. 553-563.
- Boucher, C., and G. Nard (1985). "Capabilities of the TR5S Sercel GPS receiver for precise positioning." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 135-146.
- Bowen, A. F., and P. Kruh (1984). "The influence of GPS user clock stability during periods of degraded satellite coverage." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 277-285.
- Bowen, R., P. L. Swanson, F. B. Winn, N. W. Rhodus, and W. A. Feess (1985). "Global Positioning System operational control system accuracies." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 4, pp. 351-369. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 241-257.
- Bower, T. P. (1980). "Navigation processing design for a low-cost GPS navigation system." *PLANS'80, Proceedings of the IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 17-21.
- Bradley, W. E., and A. Geneva (1988). "Integrated satellite navigation receiver system for survey." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 514-517.

- Brady, W. F., and P. S. Jorgensen (1981). "Worldwide coverage of the Phase II NAVSTAR satellite constellation." *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Trevos, Pa., 8-10 April, pp. 33-40. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 28, No. 3, pp. 167-177.
- Braff, R., and J. Bradley (1984). "Global Positioning System as a sole means for air navigation." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 306-311.
- Braff, R., and C. Shively (1985). "GPS integrity channel." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 4, pp. 351-369. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 258-274.
- Braff, R., C. A. Shively, and M. J. Zelster (1983). "Radionavigation system integrity and reliability." *Proceedings of the IEEE*, Vol. 71, No. 10, pp. 1214-1223.
- Braisted, P., R. Eschenbach, and A. Tiwari (1986). "Combining LORAN and GPS—The best of both worlds." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 33, No. 1, pp. 20-25. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 235-240.
- Brock, R. H. (1986). "The use of the Global Positioning System in the evaluation of space positioning sensors." *Proceedings of the ACSM-ASPRS annual convention on Surveying, Instrumentation, and the Global Positioning System*, Washington, D.C., March, Vol. 2, pp. 280-287.
- Brockstein, A. J., and R. J. Grethel (1980). "Calibrated and uncalibrated inertial navigation system performance in valid and jammed Global Positioning System environments." *Proceedings of the Thirty-Sixth Annual Meeting of The (U.S.) Institute of Navigation*, Monterey, Calif., 23-26 June, pp. 2-10.
- Brodie, K. J. (1987). "Real time GPS navigation state bias error covariance estimation." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 123-131.
- Brossier, R. et al. (1986). "Use of the TR5-S-B GPS receiver in airborne photography surveys." *Proceedings of the ISPRS Commission 1 Symposium on Progress in Imaging Sensors*, Stuttgart, F.R.G., September. *International Archives of Photogrammetry and Remote Sensing*, Vol. 26, Part 1, ESA SP-252, pp. 589-596.
- Brown, A. K. (1988). "Civil aviation integrity requirements for the Global Positioning System." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 1, pp. 23-40.
- Brown, A. (1989). "Extended differential GPS." The NAVSYS Corporation, Monument, Colo., 10 pp. Presented at ION 89, San Mateo, January.
- Brown, A. K., and M. A. Sturza (1985). "Static point positioning with an L1, C/A code GPS receiver." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 161-174.
- Brown, A. K., W. M. Bowles, and T. P. Thorvaldsen (1982). "Interferometric attitude determination using the Global Positioning System: A new gyrotheodolite." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1289-1304.
- Brown, A., J. Ladd, R. Welshe, and M. Sturza (1986). "MINI-MAC™ - A new generation dual-band surveyor." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. I, pp. 475-488. This also appears under Ladd, J.W., R.G. Welsche, A. Brown, and M. Sturza (1986).
- Brown, C. C. (1984). "Global civil satellite navigation systems." *The (U.K.) Hydrographic Journal*, No. 33, pp. 79-80.
- Brown, R. G., and P. Y. C. Hwang (1984). "A Kalman filter approach to precision GPS geodesy." In: *Global Positioning System*, Papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. II, pp. 155-166.

- Brown, R. G., and P. Hwang (1986). "GPS failure detection by autonomous means within the cockpit." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wa., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 5-12. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 33, No. 4, pp. 335-353.
- Brown, R. G., and P. W. McBurney (1987). "Proper treatment of the delta-range measurement in an integrated GPS/inertial system." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 32-39.
- Brown, R. G., and P. W. McBurney (1988). "Self-contained GPS integrity check using maximum solution separation." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 1, pp. 41-53.
- Brozens, J. M. (1984). "A preliminary analysis of the NRL airborne gravimetry system." *Geophysics*, Vol. 49, pp. 1060-1069.
- Brzezowski, S. J., R. C. Merenyi, and W. G. Heller (1986). "Measurement capability of moving-receiver radio interferometry." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 92-98.
- Buechler, D., and M. Foss (1987). "Integration of GPS and strapdown inertial subsystems into a single unit." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 40-48. Also in *Proceedings of the ION Forty-Third Annual Meeting*, Dayton, Ohio, 23-25 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 113-117. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 2, pp. 140-159.
- Buennagel, L. A., P. F. MacDoran, R. E. Neilan, D. J. Spitzmesser, and L. E. Young (1984). "Satellite Emission Range Inferred Earth Survey (SERIES) project: Final report on research and development phase, 1979 to 1983." March, NASA, Jet Propulsion Laboratory publication No. 84-16, Pasadena, Calif., 46 pp.
- Bugoslavskaya, N. Y. (1962). *Solar activity and the ionosphere*, 1959 edition translated from the Russian by G.O. Harding, Pergamon Press, New York, 39 pp.
- Buhl, P., and P. Manning (1987). "Integrating marine navigational systems in post cruise processing." *INSMAP 86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 313-316.
- Buisson, J. A., O. J. Oaks, and H. Warren (1985). "Absolute calibration and precise positioning between major European time observatories and the U.S. Naval Observatory using GPS." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 433-446.
- Burgess, R. A. (1988). "GPS—A European perspective." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 4-7.
- Bürki, B., A. Geiger, H. G. Kahle, W. Gurtner, and P. Dunn (1987). "Wegener-Medlas-Project (WMP): SLR, TLR, and GPS measurements Monte Generoso, Southern Alps, Switzerland." Presented at: NASA's 12th Crustal Dynamics Project Meeting, 24-26 March, Jet Propulsion Laboratory, Pasadena, Calif.
- Burnham, G. O., and R. H. J. Vos (1984). "The synergism of Global Positioning System and electronic terrain map systems." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 321-326.
- Butterfield, F. E., and R. E. Sung (1979). "Phase II GPS receiver design philosophy." In: *Principles and Operational Aspects of Precision Positioning Determination Systems*, NATO AGARDograph No. 245, Ed. C.T. Leondes, pp. 17-1 to 17-9.
- Cain, J. D. (1986). "MACROMETRY surveys—A summary of results." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 419-430.

- Cain, J. D. (1988). "Mini-Mac™ model 2816 GPS surveyor." *Journal of Surveying Engineering*, November, Vol. 114, No. 4, pp. 209-216.
- Caldwell, W. C. (1988). "Analysis of mission computer utilization of the GPS navigation solution during a simulated fighter/attack scenario." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 165-170.
- Callahan, T. E., D. J. Findlay, and S. Kochanski (1984). "Impact of GPS on ocean surveying." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 32-35.
- Campbell, J., H. Cloppenburg, and F. J. Lohmar (1984). "Estimating the ionospheric refraction effect on interferometric GPS measurements." Presented at: International Symposium on Space Techniques for Geodynamics, 9-13 July, Sopron, Hungary, 12 pp.
- Campbell, J., T. Maniatis, A. Müller, J. Vierbuchen, and F. J. Lohmar (1986). "On the generation of ionospheric refraction corrections for single frequency GPS measurements." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, Austin, Tex., University of Texas at Austin, Austin, Tex., Vol. I, pp. 631-646.
- Campbell, S. D., and R. R. LaFrey (1984). "Flight test results for an experimental GPS C/A-code receiver in a general aviation aircraft." In: *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. II, pp. 239-257.
- Cannon, M. E., and K. P. Schwarz (1989). "GPS semi-kinematic positioning along a well-controlled traverse." Presented at: Fifth International Geodetic Symposium on Satellite Positioning, Las Cruces, N. Mex., 13-17 March, 10 pp.
- Cannon, E., G. Lachapelle, and C. C. Goad (1985). "Recovery of a 1700 km baseline using dual frequency GPS carrier phase measurements." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 593-602.
- Cannon, M. E., K. P. Schwarz, and R. V. C. Wong (1986). "Kinematic positioning with GPS: An analysis of road tests." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, Austin, Tex., University of Texas at Austin, Austin, Tex., Vol. II, pp. 1251-1268.
- Cariveau, B. K., and K. L. Theriklesen (1988). "Satellite data management in DoD NAVSTAR GPS receivers." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 134-144.
- Carnebianca, C. (1988). "Regional to Global Satellite-based navigation systems." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 25-33.
- Carpenter, M. H., and T. P. Nolan (1981). "Global radio navigation, where on Earth are we?" *Proceedings of the National Marine Navigation Meeting of The (U.S.) Institute of Navigation*, Vallejo, Calif., 5-7 October, pp. 58-61.
- Chamberlain, S., R. Eastwood, and J. Maenpa (1986). "The WM101 GPS satellite surveying equipment." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, Austin, Tex., University of Texas at Austin, Austin, Tex., Vol. I, pp. 439-454.
- Chapman, W. (1986). "Profiling the Great Salt Lake desert with the aerial profiling of terrain system (APTS)." *Proceedings of the Third International Symposium on Inertial Technology for Surveying and Geodesy*, Banff, Alberta, 16-20 September 1985, Department of Surveying Engineering Publication No. 60005, University of Calgary, Calgary, Alberta, Vol. 2, pp. 807-822.
- Chin, L. (1985). "A feasibility study of using GPS to calibrate an instrument radar." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 1, pp. 57-67.
- Ching, B. K., and Y. T. Chiu (1973). "A phenomenological model of global ionospheric electron density in the E-, F1-, and F2-regions." *Journal of Atmospheric and Terrestrial Physics*, Vol. 35, pp. 1615-1630.

- Chiu, Y. T. (1975). "An improved phenomenological model of ionospheric density." *Journal of Atmospheric and Terrestrial Physics*, Vol. 37, pp. 1563-1570.
- Chory, M. A., D. P. Hoffman, and J. L. LeMay (1986). "Satellite autonomous navigation—Status and history." *PLANS'86, Proceedings of the Position Location and Navigation Symposium*, La Vegas, Nev., November, pp. 110-121.
- Chrzanowski, A. (1987). "Experiencias con GPS en mediciones de deformaciones." Presented at: Workshop on New Techniques in Geodesy and Cartography, October, Association of Engineers of Venezuela, Caracas, Venezuela.
- Chrzanowski, A., Y. Q. Chen, R. Leeman, and J. Leal (1988). "Integration of the Global Positioning System with geodetic levelling surveys in ground subsidence studies." *Proceedings of 5th International Symposium on Deformation Measurements and 5th Canadian Symposium on Mining Surveying and Rock Deformation Measurements*, Eds. A. Chrzanowski, W. Wells, 6-9 June, Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B., pp. 142-155.
- Chrzanowski, A., R. B. Langley, D. E. Wells, and J. D. McLaughlin (1983). "A forecast of the impact of GPS on surveying." Technical Papers of: 43rd Annual Meeting of the American Congress on Surveying and Mapping, March, Washington, D.C., pp. 625-634.
- Chrzanowski, A., R. B. Langley, D. E. Wells, and J. D. McLaughlin (1984). "Le Systeme GPS: Les retombées possibles de la technologie GPS sur les activités d'arpentage." *Arpenteur-géomètres*, April, Vol. 11, No. 1, pp. 9-14.
- Chrzanowski, A., R. B. Langley, D. E. Wells, and J. D. McLaughlin (1984). "Prognozy dotyczące wpływu globalnych systemów wyznaczania współrzędnych (GPS) na geodezję." *Przegląd Geodezyjny*, Vol. 56, No. 12, pp. 10-12.
- Clark, T. A., B. E. Corey, J. L. Davis, and others (1985). "Precision geodesy using the Mark-III very-long-baseline interferometry system." *IEEE Transactions, Geoscience and Remote Sensing*, Special Issue on satellite geodynamics, Vol. GE-23, No. 4, pp. 438-449.
- Clynch, J. R., and D. S. Coco (1986). "Error characteristics of high quality geodetic GPS measurements: Clocks, orbits, and propagation effects." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., pp. 539-556.
- Clynch, J. R., and B. A. Renfro (n.d.). "Evaluation of ionospheric residual range error model." Applied Research Laboratory paper, University of Texas at Austin, Austin, Tex., U.S.A., 21 pp.
- Clynch, J. R., D. S. Coco, and B. A. Renfro (1983). "Differential Doppler measurements of the ionosphere during a solar eclipse." *Journal of Atmospheric and Terrestrial Physics*, Vol. 45, No. 7, pp. 527-535.
- Clynch, J., W. Harper, and J. E. French (1987). "Evaluation of a large ship GPS system: Direct computation and dynamic differential." *INSMAP 86, Proceedings of the International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 87-96.
- Coco, D. S., and J. R. Clynch (1982). "The variability of the tropospheric range correction due to water vapor fluctuations." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, 8-12 February, Las Cruces, N. Mex., Vol. I, pp. 475-496.
- Coco, D. S., and J. R. Clynch (1986). "System performance tests for the TI 4100 geodetic receiver." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. I, pp. 399-418.
- Codik, A. (1985). "Autonomous navigation of GPS satellites: A challenge for the future." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 3, pp. 221-232.
- Collins, J. (1982). "A satellite solution to surveying." *Professional Surveyor*, Nov/Dec, pp. 13-17.
- Collins, J. (1985). "Precise baseline determination with a new codeless GPS receiver." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 201-206.
- Collins, J. (1985). "GPS surveying techniques." *ACSM Bulletin*, June, pp. 17-20. Also in *P.O.B.*, Vol. 11, No. 4, 1986, pp. 22-28.

- Collins, J. (1986). "FGCC test results Trimble 4000S." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. I, pp. 529-534.
- Collins, J. (1986). "GPS satellite surveying—A tool for engineering surveys." *Proceedings of the FIG XVIII International Congress of Surveyors*, Toronto, Ontario, June, Commission 6, pp. 93-98.
- Collins, J. (1986). "GPS satellite surveying for economical data base ground truth." *Proceedings of the FIG XVIII International Congress of Surveyors*, Toronto, Ontario, June, Commission 8, pp. 134-138.
- Collins, J. (1986). "Measuring platform subsidence using GPS satellite surveying." *Land, Sea and Space—Today's Survey Challenge, Proceedings of the Canadian Petroleum Association Colloquium IV*, Lake Louise, Alberta, April, pp. 377-382.
- Collins, J., and A. Leick (1985). "Analysis of Macrometer networks with emphasis on the Montgomery (Pa.) County survey." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 677-694.
- Colombo, O. L. (1986). "Ephemeris errors of GPS satellites." *Bulletin Géodésique*, Vol. 60, No. 1, pp. 64-84.
- Colombo, O. L., and N. P. Zelensky (1987). "Precise determination of GPS orbits and of station position." Presented at: Spring Meeting of the American Geophysical Union, 18-21 May, Baltimore, Md., 6 pp.
- Copps, E. M. (1986). "An aspect of the role of the clock in a GPS receiver." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 31, No. 3, pp. 233-242. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 44-53.
- Copps, E. M., G. J. Geier, W. C. Fidler, and P. A. Grundy (1980). "Optimal processing of GPS signals." *Proceedings of the Thirty-Sixth Annual Meeting of The (U.S.) Institute of Navigation*, Monterey, Calif., 23-26 June, pp. 17-24. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 27, No. 3, pp. 171-182. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 13-24.
- Corten, V. F. L. (1983). "Das Leistungsvermögen von Bildflugnavigations- und Sensororientierungssystemen." *Bildmessung und Luftbildwesen*, Vol. 51, No. 3, pp. 82-102.
- Corten, F. L. J. (1984). "Applications of navigation systems and of sensor orientation systems in survey navigation, in aerial triangulation and in establishment of control." *International Archives of Photogrammetry and Remote Sensing*, Proceedings ISPRS XV Congress, Vol. XXV, No. A1, pp. 26-36.
- Counselman, C. C. (1979). "Opportunity for millimeter positioning with GPS." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, p. 208.
- Counselman, C. C. (1982). "The Macrometer™ interferometric surveyor." *Proceedings of the International Symposium on Land Information at the Local Level*, University of Maine at Orono, Maine, August, pp. 233-241. Also in *CSTG Bulletin* No. 5, Technology and Mission Developments, March, 1983, pp. 32-37.
- Counselman, C. C., and S. A. Gourevitch (1981). "Miniature interferometer terminals for earth surveying: Ambiguity and multipath with Global Positioning System." *IEEE Transactions on Geoscience and Remote Sensing*, October, Vol. GE-19, No. 4, pp. 244-252.
- Counselman, C. C., and J. W. Ladd (1987). "A dual-band interferometric GPS marine navigation system." *INSMAP'86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 197-214.
- Counselman, C. C., and I. I. Shapiro (1979). "Miniature interferometer terminals for earth surveying." *Bulletin Géodésique*, Vol. 53, No. 2, pp. 139-163.
- Counselman, C. C., and D. H. Steinbrecher (1982). "The Macrometer™: A compact radio interferometry terminal for geodesy with GPS." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1165-1172.
- Counselman, C. C., R. I. Abbot, S. A. Gourevitch, R. W. King, and A. R. Paradis (1983). "Centimetre-level relative positioning with GPS." *Journal of Surveying Engineering*, Vol. 109, No. 2, pp. 81-89.
- Counselman, C. C., S. A. Gourevitch, R. W. King, T. A. Herring, I. I. Shapiro, R. L. Greenspan, A. E. E. Rogers, A. R. Whitney, and R. J. Cappallo (1981). "Accuracy of baseline determinations by MITES assessed by comparison with tape, theodolite and geodimeter measurements." *EOS, Transactions, American Geophysical Union*, Vol. 62, p. 260 (abstract only).
- Counselman, C. C., R. J. Cappallo, S. A. Gourevitch, R. L. Greenspan, T. A. Herring, R. W. King, A. E. E. Rogers, I. I. Shapiro, R. E. Snyder, D. H. Steinbrecher, and A. R. Whitney (1982). "Accuracy of relative

- positioning by interferometry with GPS: Double-blind test results." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1173-1176.
- Cox, D. B. (1979). "Integration of GPS with inertial navigation systems." In: *Principles and Operational Aspects of Precision Position Determination Systems*, Ed. C.T. Leondes, NATO AGARDograph No. 245, pp. 19-1 to 19-10. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. I, 1980, pp. 144-153.
- Crossfield, J. K. (1985). "Comparing the predicted positioning costs of Doppler and GPS technology." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 625-632.
- Crow, R. B., R. F. Bletzacker, R. J. Najarian, G. H. Purcell, J. I. Statman, and J. B. Thomas (1984). "Series-X test results." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 264-271. Also presented at Spring Meeting of AGU, Cincinnati, Ohio, 14-17 May (abstract: *EOS, Transaction, AGU*, Vol. 65, No. 16, April, p. 191).
- Croxford, R. (1984). "Global civil satellite navigation systems — Operational requirement for oceanic navigation." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 187-194. Also in *The (U.K.) Journal of Navigation*, Vol. 37, No. 3, pp. 325-332.
- Cuppels, G., and J. Collins (1985). "The Montgomery County, Pennsylvania, Global Positioning Geodetic control project." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 705-712. Also in *Surveying and Mapping*, Vol. 47, No. 2, 1987, pp. 109-115.
- Curry, T. J., and F. Cassidy (1988). "Developing a low-cost GPS receiver for marine applications." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 492-498.
- Dahlke, S. R., D. S. Coco, and C. E. Coker (1988). "Effect of GPS system biases on differential group delay measurements." *Proceedings of The Institute of Navigation Satellite Division Student Paper Competition*, Colorado Springs, Colo., 23 September, The Institute of Navigation, Washington, D.C., pp. 23-44.
- Dale, S. A., and P. Daly (1986). "Recent observations on the Soviet Union's GLONASS navigation satellites." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 20-25.
- Damiani, T. R., and N. B. Hemesath (1988). "Choosing the best solution to the GPS integrity and coverage issues." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 2, pp. 217-237.
- Davidson, D. A., D. Delikaraoglou, R. Langley, B. G. Nickerson, P. Vaníček, and D. E. Wells (1982). "NAVSTAR differential positioning preanalysis." Interim report for: Geodetic Survey of Canada, Ottawa, March, by Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B.
- Davidson, D., D. Delikaraoglou, R. Langley, B. Nickerson, P. Vaníček, and D. Wells (1983). "Global Positioning System differential positioning simulations." March, Department of Surveying Engineering Technical Report 90, University of New Brunswick, Fredericton, N.B.
- Davidson, J. M., C. L. Thornton, C. J. Vegos, L. E. Young, and T. P. Yunck (1985). "The March 1985 demonstration of the fiducial network concept for GPS geodesy: A preliminary report." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 603-612.
- Davidson, J. M., C. L. Thornton, S. A. Stephens, S. Wu, S. M. Lichten, J. S. Border, and O. J. Sovers (1986). "Demonstration of the fiducial concept using data from the March 1985 GPS field test." *Proceedings of the*

Fourth International Geodetic Symposium on Satellite Positioning, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1019-1028.

- Davis, P. (1979). "A global positioning monitor and control service for 1995." *Proceedings of the Thirty-Fifth Annual Meeting of The (U.S.) Institute of Navigation*, St. Louis, Mo., 18-21 June, pp. 20-25.
- Dawson, G. A. (1988). "The analysis of GPS double difference phase observations." April, Department of Surveying Engineering Technical Report II, University of New Brunswick, Fredericton, N.B., 43 pp.
- Dean, W. M., and D. A. Feldman (1980). "Coast Guard/MARAD tests of the GPS navigation set type Z. Phase I static tests." *Proceedings of the National Marine Navigation Meeting of The (U.S.) Institute of Navigation*, Yorktown, Va., 6-8 November, pp. 14-17. Magnavox Report MX-TM-3323-80.
- DeGroot, L. E., D. H. Monk, and M. Y. McElreath (1984). "Civil aviation application of the NAVSTAR Global Positioning System." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 105-113. Also in *The (U.K.) Journal of Navigation*, Vol. 37, No. 3, pp. 360-370.
- Delikaraoglou, D. (1979). "From Transit to NAVSTAR: One step closer to precise offshore positioning." Presented at: 6th Annual Meeting of the Canadian Geophysical Union, June, Fredericton, N.B.
- Delikaraoglou, D. (1981). "Application of NAVSTAR/GPS to precise positioning." Presented at: 8th Annual Meeting of the Canadian Geophysical Union, May, Calgary, Alberta.
- Delikaraoglou, D. (1986). "Report on a Canadian Active Control System using GPS." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wa., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 106-110.
- Delikaraoglou, D. (1988). "On the stochastic modelling of GPS ionospheric delays." August, Geodetic Survey Division, Canada Centre for Surveying, Energy, Mines and Resources Canada, Ottawa, Ontario, 20 pp. Accepted for publication in *Manuscripta Geodaetica*, November 1988, 10 pp.
- Delikaraoglou, D., and R. R. Steeves (1985). "The impact of VLBI and GPS on geodesy in Canada." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 743-752.
- Delikaraoglou, D., and D. E. Wells (1982). "The continuing evolution of NAVSTAR/GPS survey navigation capabilities. Recent test results." Presented at: Spring Meeting of American Geophysical Union, May, Philadelphia, Md. (abstract: *EOS, Transactions, American Geophysical Union*, Vol. 63, No. 18, p. 300).
- Delikaraoglou, D., N. Beck, D. McArthur, and K. Lochhead (1985). "On the establishment of 3-D geodetic control by interferometry with the TI 4100 GPS receiver." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 645-656.
- Delikaraoglou, D., D. J. McArthur, P. Héroux, and N. Beck (1986). "Improvements in the second generation GPS software of the Canadian Geodetic Survey." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. I, pp. 821-838.
- Delikaraoglou, D., D. Davidson, R.B. Langley, B.G. Nickerson, P. Vaníček, and D.E. Wells (1983). "Geodetic baseline accuracies from differential GPS observations." Presented at: Spring Meeting of American Geophysical Union, May, Baltimore, Md. (abstract: *EOS, Transactions, American Geophysical Union*, Vol. 64, p. 210).
- DeLoach, S. R. (1989). "Continuous deformation monitoring with GPS." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 93-110. Also presented at the ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, Nashville, Tenn., 11-14 May 1988.
- Denaro, R. P. (1981). "NAVSTAR: The all-purpose satellite." *IEEE Spectrum*, May, pp. 35-40.
- Denaro, R., V. G. Harvester, and R. L. Harrington (1980). "GPS phase I user equipment field tests." In: *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. I, pp. 125-131.
- Denaro, R. P., P. V. W. Loomis, and D. Yoerger (1986). "The application of differential GPS to marine vessel dynamic positioning." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 83-91.

- Denker, H., and H. G. Wenzel (1987). "Local geoid determination and comparison with GPS results." *Bulletin Géodésique*, Vol. 61, No. 4, pp. 349-366.
- Dermanis, A., and E. Grafarend (1981). "Estimability analysis of geodetic, astrometric and geodynamical quantities in very long baseline interferometry." *Geophysical Journal of the Royal Astronomical Society*, 64, pp. 31-56.
- Dew, R. E. (1979). "Review of the NAVSTAR Global Positioning System." *Proceedings of the Second International Geodetic Symposium on Satellite Doppler Positioning*, Austin, Tex., January, Applied Research Laboratories, University of Texas at Austin, Austin, Tex., Vol. II, pp. 1089-1110.
- Diederich, P. (1988). "The development of civil satellite navigation in Europe." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 6 pp.
- Diederich, P., and S. S. D. Jones (1984). "NAVSAT: Principles and potential." *The (U.K.) Journal of Navigation*, Vol. 37, No. 2, pp. 200-208.
- Diederich, P., H. Laue, and C. Rosetti (1984). "NAVSAT: A global civil navigation satellite system." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 25-31.
- Diesel, J. W. (1987). "Integration of GPS/INS for maximum velocity accuracy." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 58-65. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 3, pp. 190-211.
- Dietrich, R. (1988). "Untersuchungen zur Nutzung künstlicher Erdsatelliten für die geodätische Koordinatenbestimmung." Veröffentlichungen des Zentralinstitutes für Physik der Erde Nr. 96, March, Zentralinstitut für Physik der Erde, Potsdam, G.D.R., 165 pp.
- Divakaruni, S. P., R. A. Stensland, and M. A. Brenner (1986). "Ring laser gyro inertial and GPS integrated navigation system for commercial aviation." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 73-80.
- Divine, D., and S. G. Francisco (1984). "Synchromesh: A practical enhancement to GPS service." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 169-174.
- D'Oliveira, B. (1987). "Navstar fixes it." *Navigation News*, Vol. 1, No. 1, p. 24.
- Donatelli, D. E., and R. S. Allen (1978?). "Ionospheric refractive correction using an adaptive procedure." In: *Characteristics of the Lower Atmosphere Influencing Radio Wave Propagation*, Papers reprinted from Conference Proceedings No. 346, AGARD, Neuilly sur Seine, France, D1-65 to D1-80.
- Donatelli, D. E., and R. S. Allen (?). "Temporal variability of ionospheric refraction correction." Regis College Research Center, Weston, Mass., 7 pp.
- Donatelli, D. E., and R. S. Allen (1981). "Time cells for adaptive prediction of total electron content." *Radio Science*, Vol. 16, No. 2, pp. 261-269.
- Done, P. (1986). "Developments in GPS instrumentation." *The (U.K.) Hydrographic Journal*, October, No. 42, pp. 39-42.
- Dork, R. A. (1986). "Satellite navigation systems for land vehicles." *PLANS'86, Proceedings of the Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 414-418.
- Doucet, K. (1986). "Performance considerations for real-time navigation with the GPS." February, Department of Surveying Engineering Technical Report No. 122, University of New Brunswick, Fredericton, N.B.
- Doucet, K., H. Janes, D. Delikaraoglou, D. E. Wells, R. B. Langley, and P. Vaniček (1986). "Examples of geodetic GPS network design." Presented at: Joint Annual Meeting of the Geological Association of Canada, Minearological Association of Canada, and Canadian Geophysical Union, May, Ottawa, Ontario.

- Dunham, S. J., and J. Kriegsman (1988). "Improved ship's navigation accuracy through precise data reconstruction." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 509-513.
- Dunn, P. D., and R. H. Higgs (1984). "Benefits of early implementation of a Global Positioning System for hydrographic surveys." *HYDRO'84 Hands on to High Tech*, Proceedings of the U.S. National Ocean Service Hydrographic Conference, Rockville, Md., 25-27 April, pp. 80-85.
- Durboraw, I. N. (1986). "Test results of a differential GPS receiver in a dynamic environment." *Proceedings of the FIG XVIII International Congress of Surveyors*, Toronto, Ontario, 1-11 June, Vol. Commission 4 Poster Session, pp. 285-286.
- Durboraw, I. N. (1987). "Accurate positioning of marine vessels using GPS." *INSMAP 86, Proceedings of the International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 157-164.
- Durboraw, I. N., and J. C. Sligo (1988). "Surveying with the Motorola Eagle GPS receiver." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 15 pp. To be published in *Journal of Surveying Engineering*.
- Duven, D. J., C. W. Meyrick, J. R. Vetter, and M. M. Feen (1985). "Performance experience of and design goals for the SATRACK I & II missile tracking systems." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 833-842.
- Dyment, M. J. (1982). "Optimizing the INS/GPS hybrid for navigation." *Proceedings of the Canadian Petroleum Association Colloquium III on Petroleum Mapping and Surveys in the 80s*, Banff, Alberta, 14-16 October, pp. 209-224.
- Easton, R. L., and J. A. Buisson (1979). "The contribution of navigation technology satellites to the Global Positioning System." *Proceedings of the Second International Geodetic Symposium on Satellite Doppler Positioning*, Austin, Tex., January, Applied Research Laboratories, University of Texas at Austin, Austin, Tex., Vol. II, pp. 1111-1152.
- Eastwood, R. A. (1984). "Early applications of civil GPS." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 180-189. Magnavox Technical Paper MX-TM 3393-84.
- Eaton, R. M., S. E. Masry, and B. Shaw (1986). "An electronic chart testbed." *HYDRO'86, Proceedings of the 5th Biennial International Symposium of The Hydrographic Society*, University of Southampton, U.K., December, The Hydrographic Society, pp. 27.1-27.12.
- Edwards, F. G., and P. V. W. Loomis (1985). "Civil helicopter flight operations using differential GPS." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 3, pp. 233-253. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 173-193.
- Eissfeller, B. (1985). "The estimation of orthometric heights from GPS baseline vectors using gravity field information and least-squares collocation." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 1, pp. 277-278.
- Ekseth, R., and S. Rekkdal (1986). "Experiences with NAVSTAR GPS in Norway." *Proceedings of the FIG XVIII International Congress of Surveyors*, Toronto, Ontario, June, Commission 4, pp. 98-112.
- Eller, D. (1985). "GPS/IMU navigation in a high dynamics environment." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 773-782.

- Ellett, M. J. (1986). "Civil access to the Precise Positioning Service of the NAVSTAR Global Positioning System." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 505-509.
- Emara-Shabaik, H. E. (1979). "Alternate constellations for the Global Positioning System." In: *Principles and Operational Aspects of Precision Position Determination Systems*, Ed. C.T. Leondes, NATO AGARDograph No. 245, pp. 23-1 to 23-37.
- Enge, P. K., M. F. Ruane, and D. Langais (1987). "Coverage of a radiobeacon-based differential GPS network." *Proceedings of the ION Forty-Third Annual Meeting*, Dayton, Ohio, 23-25 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 70-77. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 4, pp. 307-324.
- Enge, P. K., M. F. Ruane, and L. Sheynblatt (1986). "Marine radiobeacons for the broadcast of differential GPS data." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 368-376.
- Eren, K. (1986). "GPS geodetic network adjustment using triple difference observations and a priori information." *Manuscripta Geodaetica*, Vol. 11, No. 4, pp. 289-292.
- Eren, K. (1989). "Effect of orbital a priori information on baseline determinations." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 149-159.
- Eren, K., and A. Leick (1986). "GPS network adjustment with a priori information and orbital determination capabilities." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. I, pp. 769-784.
- Eschenbach, R., T. Allison, K. Mooyman, T. Poplawski, and C. Quirion (1988). "Practical aspects of kinematic surveying." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 6 pp.
- Esposito, R. J. (1981). "FAA acceptance tests on the NAVSTAR GPS Z-set receiver." *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Trevos, Pa., 8-10 April, pp. 104-107.
- Esposito, R. J. (1981). "Initial FAA tests on the NAVSTAR GPS Z-set." *Proceedings of the Thirty-Seventh Annual Meeting of The (U.S.) Institute of Navigation*, Annapolis, Md., 9-11 June, pp. 82-88. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 28, No. 3, pp. 206-213. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 215-222.
- Euler, H., and G. Hoefgen (1984). "GRANAS a new satellite-based navigation system." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 297-301. Also in *The (U.K.) Journal of Navigation*, Vol. 37, No. 3, pp. 354-359.
- Euler, W. C., and J. W. Breedlove (1981). "Civil applications of NAVSTAR Global Positioning System." *Proceedings of the National Marine Navigation Meeting of The (U.S.) Institute of Navigation*, Vallejo, Calif., 5-7 October, pp. 54-57.
- Euler, W. C., and L. J. Jacobson (1980). "A perspective on civil use of GPS." *Proceedings of the Thirty-Sixth Annual Meeting of The (U.S.) Institute of Navigation*, Monterey, Calif., 23-26 June, pp. 33-39.
- Evans, A. G. (1985). "The Global Positioning System: An alternative to six degrees of freedom inertial navigation." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 1, pp. 279-290.
- Evans, A. G. (1986). "Comparison of GPS pseudorange and biased Doppler range measurements to demonstrate signal multipath effects." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. I, pp. 573-588.
- Evans, A. G. (1986). "Use of GPS phase measurements for dynamic relative position and velocity estimation: Laboratory test results." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1361-1376.

- Evans, A. G., R. J. Anderle, and B. R. Hermann (1982). "Colocation test results from experimental Global Positioning System geodetic receivers." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1093-1102.
- Evans, A. G., B. R. Hermann, and P. J. Fell (1981). "Global Positioning System sensitivity experiment." *Navigation, Journal of The (U.S.) Institute of Navigation*, Summer, Vol. 28, No. 2, pp. 77-84. Also in *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Trevos, Pa., 8-10 April, pp. 7-11. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 223-230.
- Evans, A. G., B. R. Hermann, D. S. Coco, and J. R. Clync (1985). "Collocation tests of an advanced geodetic Global Positioning System receiver." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, April, Rockville, Md., Vol. I, pp. 245-254.
- Evans, J. V., and R. H. Wand (1981). "Anomalous ionospheric refraction associated with the auroral zone." *Proceedings of the Symposium on the Effect of the Ionosphere on Radiowave Systems*, Washington, D.C., April, 11 pp.
- Fagan, J. H., M. D. Gaphardt, and P. E. Connolly (1979). "The impact of GPS on CV mission effectiveness." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 198-207.
- Falkenberg, W., P. Kielland, and G. Lachapelle (1988). "GPS differential positioning technologies for hydrographic surveying." *PLANS '88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 310-317.
- Feess, W. A., and S. G. Stephens (1986). "Evaluation of GPS ionospheric time delay algorithm for single-frequency users." *PLANS '86, Proceedings of IEEE Position Location and Navigation Symposium*, November, Las Vegas, Nev., pp. 206-213. Also in *IEEE Transactions on Aerospace and Electronic Systems*, Vol. AES-23, No. 3, 1987, pp. 332-338.
- Feess, B., J. Iroz, A. Satin, B. Winn, C. Wiseman, B. Bermann, E. Swift, H. Beisner, D. Allan, D. Davies, M. Weiss, W. Klepczynski, and F. Withington (1987). "GPS satellite-to-user range accuracies: A calibration experiment." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 3, pp. 229-249.
- Feess, B., J. Iroz, A. Satin, B. Winn, C. Wiseman, B. Hermann, E. Swift, H. Beisner, D. Allan, D. Davies, M. Weiss, W. Klepczynski, and F. Withington (1987). "GPS satellite-to-user range accuracies: A calibration experiment—20 October to 17 November 1986." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 178-192.
- Fell, P. J. (1980). "An analytic technique for statistically modelling random atomic clock errors in estimation." *Proceedings of the Twelfth Annual Precise Time and Time Interval Applications and Planning Meeting*, PTTI Conference, Goddard Space Flight Center, December.
- Fell, P. J. (1980). "A comparative analysis of GPS range, Doppler and interferometric observations for geodetic positioning." *Bulletin Géodésique*, Vol. 54, No. 4, pp. 564-574.
- Fell, P. J. (1980). "Geodetic positioning using a Global Positioning System of satellites." *PLANS '80, Proceedings of IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 42-47.
- Fell, P. J. (1986). "Transit and GPS—A report on geodetic positioning activities." *Bulletin Géodésique*, Vol. 60, pp. 181-192.
- Fell, P. J., and B. R. Hermann (1979). "An empirical evaluation of the effect of oscillator errors on dynamic point positioning based on the NAVSTAR GPS system." *Proceedings of the Second International Geodetic Symposium on Satellite Doppler Positioning*, Austin, Tex., January, Applied Research Laboratories, University of Texas at Austin, Vol. II, pp. 1193-1234.
- Fenton, P., D. Hynes, T. Ford, W. Corcoran, W. Falkenberg, J. Hagglund, and G. Lachapelle (1987). "Land kinematic differential positioning tests with the Norstar 1000 GPS receiver: Preliminary results." Internal report: November, Norstar Instruments Ltd., Calgary, Alberta, 9 pp.
- Ferguson, J. R., and R. L. Duncombe (1984). "Modeling UT1 - UTC and Polar motion on-board GPS satellites." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 31, No. 3, pp. 209-219.

- Fjereide, H. (1986). "DiffStar: A concept for differential GPS in northern Norway." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 33, No. 4, pp. 284-294. Also in *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 125-130.
- Fliegel, H. F., W. A. Feess, W. C. Layton, and N. W. Rhodus (1985). "The GPS radiation force model." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 113-120.
- Forssell, B. (1983). "On the influence of access charges and accuracy denial upon on-U.S. GPS use." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 30, No. 1, pp. 100-102.
- Forsyth, P. A., J. A. Fulford, J. Hofstee, and G. F. Lyon (1981). "The influence of aurora on ionospheric electron content." *Canadian Journal of Physics*, Vol. 59, pp. 1089-1096.
- Francis, F. (1986). "Global positioning surveying for a geographic information system." *Proceedings of the ACSM-ASPRS annual convention on Surveying, Instrumentation, and the Global Positioning System*, Washington, D.C., March, Vol. 2, pp. 273-279.
- Francisco, S. G. (1984). "Operational control segment of the Global Positioning System." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 51-58.
- Frei, E., and G. Beutler (1989). "Some considerations concerning an adaptive, optimized technique to resolve the initial phase ambiguities for static and kinematic GPS surveying—Techniques." Presented at: Fifth International Geodetic Symposium on Satellite Positioning, Las Cruces, N. Mex., 13-17 March, 16 pp.
- Frei, E., R. Gough, and F. Brunner (1986). "PoPS™: A new generation of GPS post-processing software." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. I, pp. 455-474.
- French, R. L. (1986). "Automobile navigation: Where is it going?" *PLANS'86, Proceedings of the Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 406-413.
- Fried, W. R. (1984). "Operational benefits and design approaches for combining JTIDS and GPS navigation." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 31, No. 2, pp. 112-128. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 209-225.
- Friess, P. (1986). "The effects of camera position and attitude data in aerial triangulation — A simulation study." *International Archives of Photogrammetry and Remote Sensing*, Proceedings, ISPRS Symposium, Stuttgart, F.R.G., 1-5 September, ESA, SP-252, Vol. 26, pp. 101-111.
- Friess, P. (1987). "The NAVSTAR Global Positioning System for aerial triangulation." *Proceedings of the 41st Photogrammetric Week at Stuttgart University*, 14-19 September, University of Stuttgart, Stuttgart, F.R.G., pp. 33-45.
- Fritzensmeier, K., G. Kloth, W. Niemeier, and K. Eichholz (1985). "Simulation studies on the improvement of terrestrial 2-D networks by additional GPS information." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 1, pp. 291-310.
- Fruehauf, H. J. (1982). "Precision oscillators and their role and performance in navigation systems." *PLANS'82, Proceedings of IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 289-301.

- Fullenwider, E. D., and P. S. Jorgensen (1984). "The updated NAVSTAR/ GPS test and operational constellations." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 315-320.
- Furuta, T., H. Fujimoto, V. Renard, J. P. Allenou, and G. Riou (1987). "Evaluation and correction of Loran-C positions in comparison with GPS data." *INSMAP 86, Proceedings of the International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 165-172.
- Gaer, M. C. (1988). "A GPS guided bistatic system for ocean bathymetry." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 4 pp.
- Gambrel, R. M. (1988). "GPS user equipment technology: The continuing evolution." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 5 pp.
- Garmulewicz, J. (1988). "Integrating long-baseline acoustics and GPS to monitor seafloor subsidence due to submarine coal mining." *Proceedings of 5th International Symposium on Deformation Measurements and 5th Canadian Symposium on Mining Surveying and Rock Deformation Measurements*, Eds. A. Chrzanowski, W. Wells, Fredericton, N.B., 6-9 June, Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B., pp. 184-194.
- Geier, G. J., A. Cabak, and L. Sieh (1987). "Design of an integrated navigation system for robotic vehicle applications." *Proceedings of the ION Forty-Third Annual Meeting*, Dayton, Ohio, 23-25 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 65-69. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 4, pp. 325-336.
- Geier, G. J., L. Carson, L. Hailey, A. Davis, G. Huth, and T. Munson (1988). "Design and predicted performance of the GPS demonstration receiver for the NASA Topex satellite." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 442-454.
- Geiger, A. (1987). "Simplified error estimation of satellite positioning." Presented at: Second GPS Technology Workshop, 23 March, Jet Propulsion Laboratory, Pasadena, Calif., 10 pp.
- Geiger, A. (1988). "Simulating disturbances in GPS by continuous satellite distribution." *Journal of Surveying Engineering*, November, Vol. 114, No. 4, pp. 182-194.
- Georgiadou, Y., and A. Kleusberg (1986). "Ionospheric delay in GPS observations." Presented at: Fall Meeting of the American Geophysical Union, December, San Francisco, Calif. (abstract: *EOS, Transactions, American Geophysical Union*, Vol. 67, No. 44, p. 912).
- Georgiadou, Y., and A. Kleusberg (1987). "Ionospheric refraction and multipath effects in GPS carrier phase observations." Presented at: Symposium U3 'Impact of GPS on Geophysics' of XIX General Assembly of IUGG, 2-22 August, Vancouver, B.C., 20 pp.
- Georgiadou, Y., and A. Kleusberg (1988). "On carrier signal multipath effects in relative GPS positioning." *Manuscripta Geodetica*, Vol. 13, pp. 172-179.
- Georgiadou, Y., and A. Kleusberg (1988). "On the effect of ionospheric delay on geodetic relative GPS positioning." *Manuscripta Geodetica*, Vol. 13, pp. 1-8. Also presented at XII General Assembly European Geophysical Society, 1987, Strasbourg, France
- Gerlach, B. E. (1985). "Positioning with a GPS pseudorange receiver— Functional model test results." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 315-376.
- Gerlach, F. L., and A. E. Jasumback (1988). "Evaluation of GPS instruments for resource management applications." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 5 pp.

- Gervais, J., M. Mayoud, G. Beutler, and W. Gurtner (1985). "Test of GPS on the CERN-LEP control network." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 337-358.
- Gibson, J. R. (1986). "The use of auxiliary data in photogrammetric adjustments." *Proceedings of the ISPRS Commission 1 Symposium on Progress in Imaging Sensors*, Stuttgart, F.R.G., September. *International Archives of Photogrammetry and Remote Sensing*, Vol. 26, Part 1, ESA SP-252, pp. 583-588.
- Gilbert, G. A. (1980). "Helicopters and NAVSTAR/GPS." *Proceedings of the Thirty-Sixth Annual Meeting of The (U.S.) Institute of Navigation*, Monterey, Calif., 23-26 June, pp. 65-70.
- Goad, C. C. (1985). "Precise relative position determination using Global Positioning System carrier phase measurements in a nondifferenced mode." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 347-356.
- Goad, C. C. (1986). "Precise positioning with the Global Positioning system." *Proceedings of the Third International Symposium on Inertial Technology for Surveying and Geodesy*, Banff, Alberta, 16-20 September 1985, Department of Surveying Engineering Publication No. 60005, University of Calgary, Calgary, Alberta, Vol. 2, pp. 745-756.
- Goad, C. C. (1988). "Investigation of an alternate method of processing global positioning survey data collected in kinematic mode." Presented at: International GPS Workshop, 10-13 April, Technische Hochschule, Darmstadt, F.R.G., 14 pp.
- Goad, C. C. (1989). "Kinematic survey of Clinton Lake dam." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 67-77.
- Goad, C. C., and B. W. Remondi (1984). "Initial relative positioning results using the Global Positioning System." *Bulletin Géodésique*, Vol. 58, No. 2, pp. 193-210. Also presented at IUGG XVIII General Assembly, Hamburg, F.R.G., August, 1983.
- Goddard, R. B. (1985). "Synchronization of the French Loran chain with the aid of GPS." *Proceedings of the Fourteenth Annual Technical Symposium of The Wild Goose Association*, Santa Barbara, Calif., October, pp. 151-159.
- Goldfarb, J. M. (1986). "Exposure station control for aerotriangulation with an INS-Differential GPS." *Proceedings of the Third International Symposium on Inertial Technology for Surveying and Geodesy*, Banff, Alberta, 16-20 September 1985, Department of Surveying Engineering Publication No. 60005, University of Calgary, Calgary, Alberta, Vol. 2, pp. 777-790.
- Goldfarb, J. M., and K. P. Schwarz (1985). "Kinematic positioning with an integrated INS-differential GPS." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 757-772.
- Goldsborough, R. G., and T. Fundak (1986). "The gravity gradiometer survey system." *Proceedings of the Third International Symposium on Inertial Technology for Surveying and Geodesy*, Banff, Alberta, 16-20 September 1985, Department of Surveying Engineering Publication No. 60005, University of Calgary, Calgary, Alberta, Vol. 2, pp. 651-662.
- Goodman, J. M. (1981). "The radiowave propagation environment — Science and technology objectives for the '80s." *Proceedings of the Symposium on the Effect of the Ionosphere on Radiowave Systems*, Washington, D.C., April, 10 pp.
- Gouldman, M. W., B. R. Hermann, and E. R. Swift (1986). "Absolute station position solutions for sites involved in the Spring 1985 GPS precision baseline test." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1045-1058.
- Grafarend, E. (1971). "Elektromagnetische Entfernungsmessung im Konzept stochastischer Prozesse." *Allgemeine Vermessungs-Nachrichten*, Vol. 2, pp. 41-49.

- Grafarend, E. W., and W. Lindlohr (1988). "WORLD: A multipurpose GPS network computer package." Presented at: International GPS Workshop, 10-13 April, Darmstadt, F.R.G., 14 pp.
- Grafarend, E. W., W. Lindlohr, and A. Stomma (1985). "Improved second order design of the Global Positioning System." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 273-284.
- Grafarend, E. W., W. Lindlohr, and A. Stomma (1985). "Improved second order design of the Global Positioning System—Ephemerides, clocks and atmospheric influence." *Proceedings, Inertial, Doppler and GPS Measurements for National Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 359-376.
- Grafarend, W., W. Lindlohr, and D. E. Wells (1985). "GPS redundancy design using the undifferenced phase observation approach." *Proceedings of the Second Meeting of the European Working Group on Satellite Radio Positioning*, Paris, France, November.
- Graham, J. S., P. C. Could, and R. J. Van Wechel (1987). "All-digital GPS receiver mechanization—Six years later." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 25-31.
- Grant, S. T., and D. E. Wells (1982). "Interactions among integrated system components." *Marine Geodesy*, Vol. 7, No. 1-4, pp. 153-170.
- Green, G. B. (1987). "Global Positioning System—A status report." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 1-24.
- Green, G. B., P. D. Massatt, and N. W. Rhodus (1988). "The GPS 21 primary satellite constellation." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Spring, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 12 pp.
- Greening, W. J. T. (1988). "GPS surveys and Boston's central artery/ third harbor tunnel project." *Journal of Surveying Engineering*, November, Vol. 114, No. 4, pp. 165-171.
- Greenspan, R. L., and J. I. Donna (1986). "Measurement errors in GPS observables." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 55-60. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 33, No. 4, pp. 319-334.
- Greenspan, R. L., A. Y. Ng, J. M. Przyjemski, and J. D. Veale (1982). "Accuracy of relative positioning by interferometry with reconstructed carrier GPS: Experimental results." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, 8-12 February, Las Cruces, N. Mex., Vol. II, pp. 1177-1196.
- Grossman, J., L. Jacobson, and L. Wells (1984). "GPS instrumentation for the Tident weapon system." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 272-276.
- Groten, E., and D. Keller (1987). "GPS aided inertial positioning in irregular ocean gravity fields." *INSMAP 86, Proceedings of the International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 173-186.
- Gründig, L., M. Neureither, and J. Bahndorf (1985). "Including Macrometer-type observables into a standard 3D adjustment program." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 377-390.
- Grunthal, M. C. (1984). "GPS control for hydrographic surveys—An overview." *HYDRO'84 Hands on to High Tech*, Proceedings of the U.S. National Ocean Service Hydrographic Conference, Rockville, Md., 25-27 April, pp. 72-79.

- Gumert, W. R., G. F. Wertz, and R. M. Iverson (1985). "An application study for using differential GPS in airborne gravity surveying." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 829-832.
- Gurtner, W., and G. Beutler (1986). "Die Rolle der Satellitengeodäsie in der Vermessung." *Mensuration, Photogrammétrie, Génie rural*, August, pp. 336-341.
- Gurtner, W., G. Beutler, and M. Rothacher (1989). "Combination of GPS observations made with different receiver types." Presented at: Fifth International Geodetic Symposium on Satellite Positioning, Las Cruces, N. Mex., 13-17 March, 13 pp.
- Gurtner, W., G. Beutler, I. Bauersima, and T. Schildknecht (1985). "Evaluation of GPS carrier difference observations: The Bernese second generation software package." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 363-372.
- Gurtner, W., G. Beutler, S. Botton, M. Rothacher, A. Geiger, H. G. Kahle, D. Schneider, and A. Wiget (1987). "The use of the Global Positioning System in mountainous areas." In: GPS Papers Presented by the Astronomical Institute of the University of Berne in 1987, Ed. W. Gurtner, Mitteilungen der Satellitenbeobachtungsstation Zimmerwald, Nr. 22, University of Berne, Switzerland, 21 pp.
- Halenka, J. (1986). "The connection between characteristic values of the 11-year cycles of solar and of geomagnetic activity." *Studia geoph. et geod.*, Vol. 30, 153-157.
- Hamilton, A., D. E. Wells, A. Chrzanowski, W. Faig, R. Langley, P. Vaníček, and J. McLaughlin (1986). "Control survey study for LRIS." August, Department of Surveying Engineering Technical Report No. 124, University of New Brunswick, Fredericton, N.B.,
- Hannah, J. (1985). "GPS—Considerations for the potential geodetic user." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 731-742.
- Hara, T., and K. Sato (?). "Electron content distribution and variation around Mizusawa, Japan." pp. 497-516.
- Hardcastle, R. (1986). "Australian trials of phase II NAVSTAR GPS user equipment." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 122-124.
- Harper, R. E. (1979). "An enroute air traffic control system using GPS to replace ground-based search radar." *Proceedings of the Thirty-Fifth Annual Meeting of The (U.S.) Institute of Navigation*, St. Louis, Mo., 18-21 June, pp. 3-12.
- Harper, R. E. (1979). "On-board precision approach system using NAVSTAR-GPS." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 183-188.
- Harris, D. (1986). "A low cost inertial/GPS integrated approach to land navigation." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 425-430.
- Harris, M. M., G. D. Hickman, and R. W. Booker (1986). "Development of the airborne bathymetric survey system." *HYDRO USA '86, Proceedings of the Second Biennial National Ocean Service International Hydrographic Conference*, Norfolk, Va., 25-27 March, pp. 50-55.
- Harrison, N. (1989). "PS talks with Javad Ashjaee: An innovative GPS technology and new citizenship make him believe in a bright future." *Professional Surveyor*, March/April, pp. 44-46.
- Hartl, P., and W. Schoeller (1986). "Application of GPS-receivers for earth observation." *International Archives of Photogrammetry and Remote Sensing*, Proceedings of the ISPRS Symposium, Stuttgart, F.R.G., 1-5 September, ESA, SP-252, Vol. 26, Part 1, pp. 207-214.
- Hartl, P., and A. Wehr (1986). "Coordinate transformation procedures for GPS-attitude control." *International Archives of Photogrammetry and Remote Sensing*, Proceedings of the ISPRS Symposium, Stuttgart, F.R.G., 1-5 September, ESA, SP-252, Vol. 26, Part 1, pp. 215-226.

- Hartl, P., W. Schöller, and K. H. Thiel (1985). "GPS related activities of the INS." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 391-402.
- Hartl, P., W. Schöller, and K. H. Thiel (1985). "GPS—Technology and methodology for geodetic applications." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 1, pp. 209-226.
- Hartl, P., W. Schäfer, C. Reigber, and H. Wilmes (1986). "PRARE system description." *Proceedings of an ESA Special Workshop on Solid Earth Science and Application Mission for Europe (SESAME)*, Chiemsee, F.R.G., 4-6 March, Vol. ESA SP-1080, pp. 81-94.
- Hartmann, G. K. (1975). "HF and UHF propagation studies of the mid-latitude ionosphere." *Annales de Geophysique*, Vol. 31, No. 1, pp. 39-51.
- Hartmann, G. K., and R. Leitinger (1984). "Range errors due to ionospheric and tropospheric effects for signal frequencies above 100 MHz." *Bulletin Géodésique*, Vol. 58, pp. 109-136.
- Hartman, R. G. (1988). "An integrated GPS/INS design approach." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 1, pp. 121-134.
- Hatch, R. (1982). "The synergism of GPS code and carrier measurements." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, 8-12 February, Las Cruces, N. Mex., Vol. II, pp. 1213-1232. Magnavox Technical Paper MX-TM 3353-82.
- Hatch, R. R. (1986). "Dynamic differential GPS at the centimeter level." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1287-1298.
- Hatch, R. R., and E. V. Avery (1988). "A strategic planning tool for GPS surveys." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 22 pp.
- Hatch, R., and K. Larson (1985). "MAGNET-4100 GPS survey program processing techniques and test results." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 285-298.
- Healy, M. S. (1981). "NAVSTAR/GPS navigation satellite systems status." *Federal Register*, "Notices," Vol. 46, No. 66, pp. 20724-20725.
- Hein, G. W. (1985). "From the phase observables of the Global Positioning System to 3D baseline components." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 403-404.
- Hein, G. W., and B. Eissfeller (1985). "Integrated modelling of GPS-orbits and multi-baseline components." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 263-272.
- Hein, G. W., H. Landau, and G. Baustert (1988). "Terrestrial and aircraft differential kinematic GPS positioning." Presented at: International GPS Workshop, 10-13 April, Technische Hochschule, Darmstadt, F.R.G., 43 pp.
- Hein, G. W., A. Leick, and S. Lambert (1989). "Integrated processing of GPS and gravity data." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 15-33.
- Hein, G. W., G. Baustert, B. Eissfeller, and H. Landau (1988). "High-precision kinematic GPS differential positioning: Experiences, results, integration of GPS with a ring laser strapdown inertial system." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 9 pp.
- Heister, H., A. Schödlbauer, and W. Welsch (1985). "Macrometer measurements 1984 in the Inn Valley network." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 567-578. Also in *Proceedings of the FIG XVIII International Congress of Surveyors*, Toronto, June, Commission 5 Poster Session, pp. 443-444.

- Hemesath, N. B., and J. M. H. Bruckner (1988). "DARPA's advanced technology GPS chipset." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 6 pp.
- Henderson, D. W., and H. Coriat (1980). "Status report — Global Positioning System." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 27, No. 1, pp. 54-64. Also in *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Dayton, Ohio, 11-13 March, pp. 135-144.
- Henderson, D. W., and J. A. Strada (1979). "NAVSTAR: Field test results." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 8-44. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 26, No. 1, pp. 12-24. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. I, 1980, pp. 234-246.
- Henderson, T. E., and C. A. Quirion (1988). "Use of GPS-derived coordinates in GIS environment." *Journal of Surveying Engineering*, November, Vol. 114, No. 4, pp. 202-208.
- Henson, D. J., and E. A. Collier (1986). "Effects of the ionosphere on GPS relative geodesy." *PLANS '86, Proceedings of IEEE Position Location and Navigation Symposium*, November, Las Vegas, Nev., pp. 230-237.
- Henson, D., and B. Montgomery (1984). "TI 4100 NAVSTAR navigator test results." Presented at: The (U.S.) Institute of Navigation 40th Annual Meeting, 28 June, Cambridge, Mass., 10 pp.
- Henson, D. J., E. A. Collier, and K. R. Schneider (1985). "Geodetic applications of the Texas Instruments TI 4100 GPS navigator." *Proceedings of the First International Symposium, on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 191-200. Also in *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 405-424.
- Henson, D. J., J. T. Dolloff, and D. D. Thornburg (1979). "The NAVSTAR Global Positioning System and time." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 65-73.
- Herben, M. H. A., and W. Kohsiek (1984). "A comparison of radio wave and in situ observations of tropospheric turbulence and wind velocity." *Radio Science*, July-August, Vol. 19, No. 4, pp. 1057-1068.
- Hervig, K. (1986). "Diffstar—A project based on differential GPS in northern Norway." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 297-302.
- Heuberger, H. (1984). "Performance of the GPS package on LANDSAT 5." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 147-152.
- Heuerman, H. R. (1982). "Global Positioning System geodetic tracking program." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1041-1056.
- Hill, R. W., and W. J. Sensus (1982). "The development of a NAVSTAR geodetic receiver." *PLANS'82, Proceedings of IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 339-341.
- Hilla, S. A. (1986). "Processing cycle slips in nondifferenced phase data from the Macrometer V-1000 receiver." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 647-662.
- Hinze, H. (1986). "NNSS and GPS monitor very slow ice motion." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1377-1390.

- Hirman, J. W., G. R. Heckman, M. S. Greer, and J. B. Smith (1988). "Solar and geomagnetic activity during cycle 21 and implications for cycle 22." *EOS, Transactions of the American Geophysical Union*, 18 October, pp. 962-973.
- Hlasny, B. S., and J. Schleppe (1988). "Control surveys for British Columbia's terrain resource information management program." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 201-206.
- Hoar, G. J., and J. E. Maenpa (1986). "WM101 — A new tool for geodesy." Presented at the Fall Meeting of the American Geophysical Union, San Francisco, Calif., 44 pp.
- Hoech, R. W. (1987). "Impact upon GPS user segment of GPS conversion to WGS 84 earth model." *Proceedings of the ION Forty-Third Annual Meeting*, Dayton, Ohio, 23-25 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 93-101.
- Hoefener, C. E. (1983). "The 4200 GPS time transfer and positioning receiver." *CSTG Bulletin No. 5*, Technology and Mission Developments, March, pp. 56-59.
- Hoefener, C. E. (1985). "Applying GPS to range tracking requirements." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 753-756.
- Hoefener, C. E., and J. Clark (1986). "Applying GPS to ERIS and other SDI applications." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 143-145.
- Hoefener, C. E., and G. S. Dankner (1987). "Improved GPS accuracy for TSPI obtained through post-flight analysis." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 159-160.
- Hofmann-Wellenhof, B. (1985). "GPS in practice—From measurements to results." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 425-442.
- Hofmann-Wellenhof, B., and B. W. Remondi (1985). "Determination of the trajectory of a moving platform using GPS carrier phase." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 443-462.
- Hofmann-Wellenhof, B., and B. W. Remondi (1988). "The antenna exchange: One aspect of high-precision GPS kinematic survey." Presented at: International GPS Workshop, 10-13 April, Technische Hochschule, Darmstadt, F.R.G., 17 pp.
- Hofmann-Wellenhof, V. B., G. Kienast, and K. Killian (1987). "Gedanken über ein neues Verfahren zur relativen Punktbestimmung: Das Hubschrauber - Positionierungs - system (HPS)." *ÖZfVuPh*, Vol. 75, No. 3, pp. 93-103.
- Hogg, D. C., and J. B. Snider (1987?). "Microwave radiometry in measurement of radio pathlength through the troposphere." NOAA/ERL, Wave Propagation Laboratory, Boulder, Colo., 6 pp.
- Hogle, L., K. Martin, and J. W. Bradley (1983). "Navigation systems performance versus civil aviation requirements." *Proceedings of the IEEE*, Vol. 71, No. 10, pp. 1208-1213.
- Hopfield, H. S. (1963). "The effect of tropospheric refraction on the Doppler shift of a satellite signal." *Journal of Geophysical Research*, September, Vol. 68, No. 18, pp. 5157-5168.
- Hopfield, H. S. (1969). "Two-quartic tropospheric refractivity profile for correcting satellite data." *Journal of Geophysical Research*, August, Vol. 74, No. 18, pp. 4487-4499.
- Hopfield, H. S. (1971). "Tropospheric effect on electromagnetically measured range: Prediction from surface weather data." *Radio Science*, March, Vol. 6, No. 3, pp. 357-367.
- Hopfield, H. S. (1978). "Tropospheric correction of electro-magnetic ranging signals to a satellite: Study of parameters." *Proceedings of the International Symposium on Electromagnetic Distance Measurement and the*

- Influence of Atmospheric refraction*, Ed. P. Richardus, Wageningen, The Netherlands, 23-28 May, 1977, Netherlands Geodetic Commission, Delft, The Netherlands, pp. 205-215.
- Hopkins, J. J. (1981). "Integrated satellite navigation and strapdown attitude and heading reference systems for civil air carriers." *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Trevos, Pa., 8-10 April, pp. 163-170. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 95-104.
- Hothem, L. D. (1986). "Latest developments in GPS geodetic satellite survey systems." *Proceedings of FIG XVIII International Congress of Surveyors*, Toronto, Ontario, June, Commission 5, p.310.
- Hothem, L. D. (1988). "GPS surveying standards and specifications." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 12 pp. To be published in *Journal of Surveying Engineering*.
- Hothem, L. D., and G. E. Williams (1985). "Factors to be considered in development of specifications for geodetic surveys using related positioning GPS techniques." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 633-644.
- Hothem, L. D., C. C. Goad, and B. W. Remondi (1984). "GPS satellite surveying—Practical aspects." Presented at: Canadian Institute of Surveying Annual Meeting, May, Québec City, P.Q. Also in *The Canadian Surveyor*, Vol. 38, No. 3, pp. 177-192.
- Hudak, G. J. (1986). "NAVSTAR Global Positioning System Collins user equipment—An evolutionary assessment." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 33, No. 1, pp. 1-19. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 70-88.
- Hui, P. J. (1982). "Impact of different GPS signal processing techniques on geodetic equipment design." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1197-1212.
- Hui, P. J. (1982). "On satellite signal processing techniques applicable to GPS geodetic equipment." *The Canadian Surveyor*, Vol. 36, No. 1, March, pp. 43-55.
- Hunter, T., and J. Ashjaee (1988). "Land navigation and fleet management with GPS, LORAN, and dead reckoning sensors." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 5 pp. Also in *PLANS '88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 54-60.
- Hutcheson, W. J., and A. D. Grierson (1986). "Gravity gradiometer post mission data processing." *Proceedings of the Third International Symposium on Inertial Technology for Surveying and Geodesy*, Banff, Alberta, 16-20 September 1985, Department of Surveying Engineering Publication No. 60005, University of Calgary, Calgary, Alberta, Vol. 2, pp. 687-708.
- Hwang, P. Y. C., and R. G. Brown (1987). "GPS geodesy: Real-time processing possibilities with the Kalman filter approach." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 164-166.
- Jacobson, L. J. (1979). "GPS is on the ground: The Global Positioning System manpack." *Signal, Journal of the U.S. Armed Forces Communications and Electronics Assn.*, March, pp. 47-48.
- Jacobson, L. J., and V. Calbi (1981). "Engineering development of NAVSTAR GPS user equipment." *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Trevos, Pa., 8-10 April, pp. 1-6.
- Jacobson, L. J., and W. G. Huston (1979). "Naval applications of NAVSTAR." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 79-82.
- Janes, H., K. Doucet, B. Roy, D. E. Wells, R. B. Langley, P. Vaníček, and M. R. Craymer (1986). "GPSNET: A program for the interactive design of geodetic GPS networks." Final contract report for: Geodetic Survey of Canada, Ottawa, September, by Canadian Engineering Surveys Co. Ltd., Edmonton, Alberta.

- Jespersen, J. L., M. Weiss, D. D. Davis, and D. W. Allan (1980). "Global Positioning System for accurate time and frequency transfer and for cost-effective civilian navigation." *PLANS'80, Proceedings of IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 468 (abstract only).
- Jeyapalan, K. (1986). "Evaluation of a prototype Global Positioning System (GPS) satellite receiver." *Proceedings of the ACSM-ASPRS annual convention on Surveying, Instrumentation, and the Global Positioning System*, Washington, D.C., March, Vol. 2, pp. 249-272.
- Johannessen, R. (1987). "International future navigation needs: Operations and concerns." *Proceedings of the ION Forty-Third Annual Meeting*, Dayton, Ohio, 23-25 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 7-12. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 4, pp. 279-289.
- Johnson, C., and P. Ward (1979). "GPS application to seismic oil exploration." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 163-169. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 26, No. 2, pp. 109-117. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. I, 1980, pp. 195-203.
- Johnson, C. R., P. W. Ward, M. D. Turner, and S. D. Roemerman (1981). "Applications of a multiplexed GPS user set." *Proceedings of the Thirty-Seventh Annual Meeting of The (U.S.) Institute of Navigation*, Annapolis, Md., 9-11 June, pp. 75-81. Also in *Navigation, Journal of The Institute of Navigation*, Vol. 28, No. 4, pp. 353-368. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 61-77.
- Jorgensen, P. S. (1978). "Ionospheric measurements from NAVSTAR satellites." Report prepared for: Space and Missile Systems Organization, Air Force Systems Command, Los Angeles Air Force Station, Los Angeles, Calif., December, by Satellite Systems Division of the Aerospace Corporation, SAMSO-TR-79-29, El Segundo, Calif., 48 pp. Also in *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, 1979, pp. 57-64.
- Jorgensen, P. S. (1979). "The short-term quality of NAVSTAR tracking data." *Proceedings of the Second International Geodetic Symposium on Satellite Doppler Positioning*, Austin, Tex., January, Applied Research Laboratories, University of Texas at Austin, Austin, Tex., Vol. II, pp. 1153-1173.
- Jorgensen, P. S. (1980). "NAVSTAR/Global Positioning System 18-satellite constellation." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 27, No. 2, pp. 89-100. Also in *Proceedings of the Thirty-Sixth Annual Meeting of The (U.S.) Institute of Navigation*, Monterey, Calif., 23-26 June, pp. 25-32. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 1-12.
- Jorgensen, P. S. (1980). "Combined pseudo range and Doppler positioning for the stationary NAVSTAR user." *PLANS'80, Proceedings of IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 450-458.
- Jorgensen, P. S. (1983). "Navigating low altitude satellites using the current four NAVSTAR/GPS satellites." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 30, No. 3, pp. 234-243. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 112-121.
- Jorgensen, P. S. (1986). "Relativity correction in GPS user equipment." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 177-183.
- Jorgensen, P. S. (1987). "Achieving GPS integrity and eliminating areas of degraded performance." *Proceedings of the ION Forty-Third Annual Meeting*, Dayton, Ohio, 23-25 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 84-92. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 4, pp. 297-306.
- Kalafus, R. M. (1982). "NAVSTAR GPS accuracy studies." Presented to: Surface Transportation Navigation Users Conference, 16-17 November, Washington, D.C., 40 pp.
- Kalafus, R. M. (1984). "Service outages in GPS associated with satellite failures." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 191-197.
- Kalafus, R. M., A. J. van Dierendonck, and N. A. Pealer (1986). "Special Committee 104 recommendations for differential GPS service." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 33, No. 1, pp. 26-

41. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 101-116. Also in *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 45-54.
- Kalafus, R. M., J. Vilcans, and N. Knable (1983). "Differential operations of NAVSTAR GPS." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 30, No. 3, pp. 187-204.
- Karcz, P. J. (1988). "GPS: Arrival in the fleet—A GPS AN/SRN-25 receiver assessment." In: *ION GPS-88*, Preliminary Proceedings of the First International Technical Meeting, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 5 pp.
- Kass, W. G., and R. L. Dulaney (1986). "Procedures for processing GPS phase observations at the National Geodetic Survey." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 753-766.
- Kato, T., I. Murata, and A. Tsuchiya (1987). "Effects of ionosphere on interferometric GPS observation." Presented at: Symposium U3 'Impact of GPS on Geophysics' of XIX General Assembly of IUGG, 9-22 August, Vancouver, B.C., 12 pp.
- Keegan, R. (1984). "The Global Positioning System and its application to photogrammetry." *International Archives of Photogrammetry and Remote Sensing*, Proceedings of ISPRS XV Congress, Vol. XXV, No. A1.
- Keel, G., H. Jones, and G. Lachapelle (1988). "A test of airborne kinematic GPS positioning for aerial photography: Methodology." In: *ION GPS-88*, Preliminary Proceedings of the First International Technical Meeting, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 5 pp.
- Kelder, H., and T. A. T. Spoelstra (1983). "Multi-technique study of ionospheric irregularities." *Proceedings of International Symposium on Beacon Satellite Studies of the Earth's Environment*, 7-11 February, Radio Science Division, National Physical Laboratory, New Delhi, India, pp. 457-461.
- Kelly, R. J. (1988). "Reducing geometric dilution of precision using ridge regression signal processing." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 461-469.
- Kelm, R. (1986). "Geodetic applications of Transit and GPS in the readjustment of the European geodetic networks." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 945-956.
- Kerr, R. A. (1985). "New technology aids geophysicists." *Science*, Vol. 227, February, pp. 619-620.
- Kerwin, C., C. Kiel, R. Cnossen, and M. Lynch (1988). "Development of a tightly integrated GPS ring laser gyro based navigation system." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 545-552.
- Khalil, M. A. (1978). "GPS multipath error model." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Atlantic City, N.J., 25-27 April, pp. 90-94.
- Kies, P. J., and D. W. Mahar (1987). "Evolution of position-locating system on data buoys." *INSMAP 86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1987, D. Reidel Publishing Company, Dordrecht, pp. 327-336.
- Kihara, M., and T. Okada (1984). "A satellite selection method and accuracy for the Global Positioning System." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 31, No. 1, pp. 8-20.
- Kishel, J. J. (1978). "GPS for civil aviation—A new approach to improved civil air operations." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Atlantic City, N.J., 25-27 April, pp. 83-89.

- Klein, A. D., and K. J. Liopiros (1979). "Civil availability of NAVSTAR GPS." *Proceedings of the Thirty-Fifth Annual Meeting of The (U.S.) Institute of Navigation*, St. Louis, Mo., 18-21 June, pp. 1-2.
- Klein, D., and B. W. Parkinson (1984). "The use of pseudo-satellites for improving GPS performance." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 31, No. 4, pp. 303-315. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 135-146.
- Klepczynski, W. J. (1983). "Modern navigation systems and their relation to timekeeping." *Proceedings of the IEEE*, Vol. 71, No. 10, pp. 1193-1198.
- Klepczynski, W. J., K. A. Kingham, M. Imae, and M. Urazuko (1985). "Time from GPS." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 879-886.
- Kleshefsky, W. D. (1986). "GPS user equipment integration aboard Grumman aircraft." Presented at: PLANS'86, IEEE Position Location and Navigation Symposium, 6 November, Las Vegas, Nev., 9 pp.
- Kleusberg, A. (?). "Integration of INS and GPS measurements." Geodetic Research Laboratory, University of New Brunswick, Fredericton, N.B., 12 pp.
- Kleusberg, A. (1986). "GPS antenna phase centre variations." Presented at: Fall Meeting of the American Geophysical Union, December, San Francisco, Calif. (abstract: *EOS, Transactions, American Geophysical Union*, Vol. 67, No. 44, p. 911).
- Kleusberg, A. (1986). "GPS positioning techniques for moving sensors." *International Archives of Photogrammetry and Remote Sensing*, Proceedings, ISPRS Symposium, Stuttgart, F.R.G., 1-5 September, ESA, SP-252, Vol. 26, pp. 201-206.
- Kleusberg, A. (1986). "Ionospheric propagation effects in geodetic relative GPS positioning." *Manuscripta Geodetica*, Vol. 11, No. 4, pp. 256-261.
- Kleusberg, A. (1986). "Kinematic relative positioning using GPS code and carrier phase observations." *Marine Geodesy*, Vol. 10, No. 3/4, pp. 257-274.
- Kleusberg, A., and L. Wanninger (1987). "Analysis of the Juan de Fuca GPS survey 1986." July, Department of Surveying Engineering Technical Report No. 127, University of New Brunswick, Fredericton, N.B.
- Kleusberg, A., and D. E. Wells (1986). "High precision differential GPS navigation." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 389-392.
- Kleusberg, A., Y. Georgiadou, and H. Dragert (1988). "Establishment of crustal deformation networks using GPS: A case study." *CISM Journal ACSGC*, Vol. 42, No. 4, pp. 341-351.
- Kleusberg, A., S. H. Quek, and D. E. Wells (1986). "Kinematic relative GPS positioning of geophysical and geodetic sensors." Presented at: Joint Annual Meeting of Geological Association of Canada, Mineralogical Association of Canada, and Canadian Geophysical Union, May, Ottawa, Ontario.
- Kleusberg, A., S. H. Quek, D. E. Wells, and J. Hagglund (1986). "Comparison of INS and GPS ship velocity determination." *Proceedings of the Third International Symposium on Inertial Technology for Surveying and Geodesy*, Banff, Alberta, 16-20 September 1985, Division of Surveying Engineering UCSE Report No. 60005, University of Calgary, Calgary, Alberta, Vol. 2, pp. 791-805.
- Kleusberg, A., S. H. Quek, D. E. Wells, J. Hagglund, and G. Lachapelle (1986). "Relative GPS positioning techniques for moving platforms." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. 2, pp. 1299-1310.
- Kleusberg, A., R. Langley, S. H. Quek, R. Santerre, P. Vaníček, and D. E. Wells (1985). "Experience with GPS at the University of New Brunswick." Invited paper: 12th Annual Meeting of the Canadian Geophysical Union, May, Calgary, Alberta (abstract: *Geophysics*, Vol. 50, No. 8, pp. 1382-1383).
- Kleusberg, A., R. Langley, R. Santerre, P. Vaníček, D. E. Wells, and G. Beutler (1985). "Comparison of survey results from different types of GPS receivers." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 579-592.
- Kleusberg, A., G. Beutler, D. Delikaraoglou, R. B. Langley, R. Santerre, R. Steeves, H. Valliant, P. Vaníček, and D. E. Wells (1984). "Comparison of Macrometer™ V-1000 and Texas Instruments 4100 GPS survey results." Invited paper: American Geophysical Union Fall Meeting, December, San Francisco, Calif. (abstract: *EOS, Transactions, American Geophysical Union*, Vol. 65, No. 45, p. 853).
- Klobuchar, J. A. (1982). "Ionospheric corrections for the single frequency user of the Global Positioning System." Presented at: National Telesystems Conference, 7-10 November, Galveston, Tex., 4 pp.

- Klobuchar, J. A. (1986). "Design and characteristics of the GPS ionospheric time delay algorithm for single frequency users." *PLANS '86, Proceedings of IEEE Positioning Location and Navigation Symposium*, November, Las Vegas, Nev., pp. 280-286. Also in *IEEE Transactions on Aerospace and Electronic Systems*, Vol. AES-23, No. 3, 1987, pp. 325-331.
- Klumpp, A. R. (1976). "Singularity-free extraction of a quaternion from a direction-cosine matrix." *Journal of Spacecraft*, December, Vol. 13, No. 12, pp. 754-755.
- Knable, N. (1979). "GPS alternate signal structure for civil use." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 170-176.
- Knable, N., and R. M. Kalafus (1984). "Clock coasting and altimeter error analysis for GPS." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 31, No. 4, pp. 289-302.
- Kohli, S. (1987). "GPS integrity monitoring using an AHRS as reference." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 155-158.
- Köhnlein, W. (1978). "Electron density models of the ionosphere." *Reviews of Geophysics and Space Physics*, August, Vol. 16, No. 3, pp. 341-354.
- Kolchinskii, I. G. (?). "Some problems in the investigation of light refraction in the earth's atmosphere." pp. 56-61.
- Korth, W. (1985). "Satellitensysteme zur regionalen operativen Anwendung der Satellitenbasisinterferometrie." *Vermessungstechnik*, Vol. 33, No. 3, pp. 91-93.
- Kouba, J. (?). "Atmospheric delays." Section of: *Satellite Doppler Positioning*, pp. 29-30. 4 pp. Portion of a chapter only
- Kouba, J. (?). "Reduction of satellite Doppler data for Canadian TRANET stations 1979-1983." Contribution to: *Earth Physics Branch No. 1128*, Department of Energy, Mines and Resources, Earth Physics Branch, Ottawa, Ontario.
- Kouba, J. (1981). "Satellite Doppler positioning for geodynamics." *Annales de Géophysique*, Vol. 37, No. 1, pp. 205-212. Contribution No. 921 of Earth Physics Branch, EMR, Ottawa, Ontario.
- Kouba, J. (1983). "A review of geodetic and geodynamic satellite Doppler positioning." *Reviews of Geophysics and Space Physics*, February, Vol. 21, No. 1, pp. 27-40.
- Kouba, J. (1983). "An efficient short-arc orbit computation." *Bulletin Géodésique*, Vol. 57, pp. 138-145.
- Kouba, J. (1986?). "Global Positioning System (GPS) capabilities and limitations for geodynamics." Internal report draft: Earth Physics Branch, EMR, Ottawa, Ontario, 17 pp.
- Kouba, J. (1988). "Reduction of Port Alberni GPS data." Presented at: American Geophysical Union Chapman Conference on GPS Measurements for Geodynamics, 19-22 September, Ft. Lauderdale, Fla., 14 pp.
- Kouba, J., A. Lambert, J. Popelar, R. R. Steeves, and W. C. Cannon (1986). "Plans for a VLBI and GPS monitoring network for geodesy and geodynamics in Canada." Submitted to: *Advances in Space Research 1986*, Geological Survey of Canada Contribution No. 30286, April, Ottawa, Ontario, 9 pp.
- Krabill, W. B., and C. F. Martin (1987). "Aircraft positioning using Global Positioning System carrier phase data." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 1, pp. 1-21.
- Krakiwsky, E. J. (1985). "Satellite and inertial surveying: Trends and prospects." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. I, pp. 227-240.
- Krakiwsky, E. J., C. B. Harris, and R. V. C. Wong (1988). "A Kalman filter for integrating dead reckoning, map matching and GPS positioning." *PLANS '88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla, 29 November-2 December, pp. 39-46.
- Krakiwsky, E. J., B. Wanless, B. Buffett, K. P. Schwarz, and M. Nakiboglu (1985). "GPS orbit improvement and precise positioning." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 73-86.

- Krishnamurti, G., S. A. Harshbarger, and T. N. Smith (1985). "The design and performance of GPS Phase II user equipment navigation software." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 3, pp. 263-281.
- Kroger, P. M., C. L. Thornton, J. M. Davidson, and S. A. Stephens (1985). "Sensitivity of GPS Caribbean baseline performance to the location of a southerly fiducial station." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 433-446.
- Krohn, D. K., A. P. Vonderohe, and D. F. Mezera (1988). "GPS in support of LIS: Project CONSOIL, Dane County, Wisconsin." *Journal of Surveying Engineering*, November, Vol. 114, No. 4, pp. 172-181.
- Kruczynski, L. R. (1978). "Aircraft navigation with the limited operational phase of the NAVSTAR Global Positioning System." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 25, No. 2, pp. 246-257. Also in *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Denver, Colo., 13-14 April, pp. 59-68. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. I, 1980, pp. 154-165.
- Kruczynski, L., and R. Eschenbach (1986). "Two-satellite navigation using Loran and GPS." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, DC, pp. 22-25.
- Kruczynski, L. R., A. Tiwari, and R. F. Eschenbach (1987). "New data on two satellite algorithms without an atomic clock." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 106-110.
- Kruczynski, L. R., D. G. Abby, W. W. Porter, and E. T. Weston (1985). "Global Positioning System differential navigation tests at the Yuma Proving Ground." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 2, pp. 126-138. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 160-172.
- Kruczynski, L. R., P. C. Li, A. G. Evans, and B. R. Hermann (1988). "Using GPS to determine vehicle attitude." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 7 pp.
- Krysinski, Z. J., and K. K. Vorbrich (1985). "Concept of the geodetic interferometer 'RYSY' for baseline determination with GPS." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 287-394.
- Kumar, M., P. J. Fell, and A. J. Pilkington (1982). "A geometric approach with the NAVSTAR Global Positioning System." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1233-1246.
- Lachapelle, G. (1986). "GPS—Current capabilities and prospects for multi-purpose offshore surveying." *Proceedings of Canadian Petroleum Association Colloquium IV on Land, Sea and Space—Today's Survey Challenge*, Lake Louise, Alberta, April, pp. 291-306. Also in *Proceedings of FIG XVIII International Congress of Surveyors*, Toronto, Ontario, June, Commission 5, pp. 86-101. Also in *Lighthouse*, No. 34, November, pp. 18-22.
- Lachapelle, G., and N. Beck (1982). "NAVSTAR/GPS single point positioning at Sheltech Canada — Preliminary results." *The Canadian Surveyor*, Vol. 36, No. 1, pp. 29-42.
- Lachapelle, G., and E. Cannon (1986). "Single and dual frequency GPS results for baselines of 10 to 500 km." *The Canadian Surveyor*, Summer, Vol. 40, No. 2, pp. 173-183. Also in *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, University of Texas at Austin, Austin, Tex., 28 April-2 May, Vol. II, pp. 1119-1134.
- Lachapelle, G., and W. Falkenberg (1986). "Use of phase data for accurate differential GPS kinematic positioning." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 393-398.
- Lachapelle, G., and D. E. Wells (1983). "GPS aided navigation with existing instrumentation." Presented at: Fifth Canadian Symposium on Navigation, May, Calgary, Alberta.
- Lachapelle, G., and D. E. Wells (1987). "Modern geodetic instrumentation and methods, and applications." *Proceedings of the Canadian Engineering Centennial Convention*, Montreal, Québec, May.

- Lachapelle, G., N. Beck, and P. Héroux (1982). "NAVSTAR/GPS single point positioning using pseudo-range and Doppler observations." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1079-1092.
- Lachapelle, G., N. Beck, and P. Héroux (1984). "GPS: Trilatération par satellite." *Arpenteur Géomètre*, Vol. 11, No. 1, April, pp. 4-8.
- Lachapelle, G., W. Falkenberg, and M. Casey (1986). "Use of phase data for accurate differential GPS kinematic positioning." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., 4-7 November, pp. 393-398. Also in *Bulletin Géodésique*, Vol. 61, No. 4, 1987, pp. 367-377.
- Lachapelle, G., J. Lethaby, and M. Casey (1984). "Airborne single point and differential GPS navigation for hydrographic bathymetry." *The (U.K.) Hydrographic Journal*, October, No. 34, pp. 11-18.
- Lachapelle, G., M. Dennler, D. Neufeldt, and R. Tanaka (1988). "Positioning of the CP rail Mount MacDonald Tunnel." *CISM Journal ACSGC*, Vol. 42, No. 1, pp. 7-16.
- Lachapelle, G., W. Falkenberg, M. Casey, and P. Kielland (1988). "HYDROSTAR: A computer program for accurate GPS real-time kinematic differential positioning." *HYDRO 88, Proceedings of the Sixth Biennial International Symposium of The (U.K.) Hydrographic Society*, Amsterdam, The Netherlands, 15-17 November, The Hydrographic Society Special Publication 23, Dagenham, Essex, United Kingdom, pp. 215-226.
- Lachapelle, G., J. Hagglund, H. Jones, and M. Eaton (1984). "Differential GPS marine navigation." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 245-255.
- Lachapelle, G., J. Hagglund, A. Kleusberg, D. E. Wells, and M. Casey (1987). "Marine kinematic positioning with GPS and attitude sensor measurements." Presented at: IAG Section II 'Advanced Space Technology' Scientific Meeting, International Union of Geodesy and Geophysics XIX General Assembly, 9-22 August, Vancouver, B.C.
- Lachapelle, G., M. Casey, M. Eaton, A. Kleusberg, J. M. Tranquilla, and D. E. Wells (1987). "GPS marine kinematic positioning accuracy and reliability." *The Canadian Surveyor*, June, Vol. 41, No. 2, pp. 143-172. Also in *INSMAP'86, Proceedings of International Symposium on Marine Positioning*, Reston, Va., 14-17 October, 1986. D. Reidel Publishing Company, 1987, pp. 113-148.
- Lachapelle, G., J. Hagglund, W. Falkenberg, P. Bellemare, M. Casey, and M. Eaton (1986). "GPS land kinematic positioning experiments." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. II, pp. 1327-1344. Also in *The Hydrographic Journal (U.K.)*, No. 42, pp. 45-55.
- Lachapelle, G., W. Falkenberg, J. Hagglund, D. Kinlyside, M. Casey, P. Kielland, and H. Boudreau (1987). "Shipborne GPS kinematic positioning with emphasis on survey launch applications." Presented at: IAG Section II 'Advanced Space Technology' Scientific Meeting, XIX General Assembly of IUGG, 9-22 August, Vancouver, B.C., 17 pp.
- Lachapelle, G., W. Falkenberg, J. Hagglund, D. Kinlyside, M. Casey, P. Kielland, and H. Boudreau (1988). "Shipborne GPS kinematic positioning for hydrographic applications." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 1, pp. 73-88.
- Lachapelle, G., B. Wanless, H. Janes, R. Leeman, E. J. Krakiwsky, K. P. Schwarz, E. Cannon, K. Pointon, M. Craymer, A. Kleusberg, R. B. Langley, P. Vaníček, and D. E. Wells (1987). "Design of a general software structure for the processing, statistical analysis, and quality control of GPS static differential networks." Final contract report to: Canada Centre for Surveying, Energy Mines and Resources Canada, December, Ottawa, Ontario.
- Ladd, J. W. (1986). "Establishment of a 3-dimensional geodetic network using the Macrometer II™ dual-band surveyor." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. II, pp. 1103-1118. Also in *Bulletin Géodésique*, Vol. 60, No. 3, pp. 255-264.
- Ladd, J. W. (1986). "Three-coordinate positioning within 1 part in 10 million without the GPS codes." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 238-242.
- Ladd, J. W., C. C. Counselman, and S. A. Gourevitch (1985). "The Macrometer II™ dual-band interferometric surveyor." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 175-180.
- Ladd, J. W., R. G. Welshe, A. Brown, and M. Sturza (1986). "MINI-MAC™— A new generation dual-band surveyor." *Bulletin Géodésique*, Vol. 60, No. 3, pp. 221-228. This paper also appears under Brown, A., J.W. Ladd, R.G. Welsche, and M. Sturza (1986).

- Lambert, S. R., and D. A. Tyler (1989). "Monitoring crustal deformation in eastern Maine using GPS." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 138-148.
- Lameijer, J. N. F. (1984). "Worldwide marine navigation: Cost-benefits and payments." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 323-331. Also in *The (U.K.) Journal of Navigation*, Vol. 37, No. 3, pp. 339-347.
- Landau, H. (1985). "GPS baseline vectors in an integrated three dimensional adju. ment." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 463-464.
- Landau, H. (1988?). "Precise kinematic GPS positioning. Part 1: Experiences on a land vehicle using TI 4100 receivers and software." Internal report: Institute of Astronomical and Physical Geodesy, University FAF Munich, Neubiberg, F.R.G., 16 pp.
- Landau, H., and G. W. Hein (1986). "Preliminary results of a feasibility study for a European GPS tracking network." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. 1, pp. 337-354.
- Landau, H., K. Hehl, B. Eissfeller, and G. W. Hein (1987). "Processing of geodetic, geophysical and satellite data by the new OPERA 2.3 software system." Presented at: XIX General Assembly of the IUGG, 9-22 August, Vancouver, B.C., pp. 60 pp.
- Langley, R. B. (1987). "The New Brunswick TI 4100 GPS campaign." Presented at: Second GPS Technology Workshop, 23 March, Jet Propulsion Laboratory, Pasadena, Calif.
- Langley, R. B., and G. Beutler (1985). "Baseline results from the Alcan VLBI and GPS campaigns of the summer of 1984." Invited paper: NASA Crustal Dynamics Project Working Group Meeting, October, Goddard Space Flight Center, Greenbelt, Md.
- Langley, R. B., and D. Parrot (1987). "The detection and removal of cycle slips in GPS phase data." Presented at: XII General Assembly of the European Geophysical Society, April, Strasbourg, France (abstract: *Terra Cognita*, Vol. 7, No. 2-3, p. 502).
- Langley, R. B., and D. E. Wells (1981). "VLBI and GPS: A proposal for initial Canadian experiments." Internal report: Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B.
- Langley, R. B., B. Arseneau, and A. C. Hamilton (1987). "The impact of GPS on the Canadian land surveyor." Presented at: 80th Annual Meeting of the Canadian Institute of Surveying and Mapping, June, Charlottetown, P.E.I.
- Langley, R. B., M. R. Craymer, and S. H. Quek (1986). "Should Canada develop a mobile VLBI facility?" Final contract report for: Geodetic Survey of Canada, Ottawa, October, by Geodetic Research Laboratory, Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B.
- Langley, R. B., J. D. McLaughlin, and D. E. Wells (1982). "The potential engineering and land surveying market for GPS." Collected papers: American Society of Civil Engineers Speciality Conference on Engineering Applications of Space Age Surveying Technology, June, Nashville, Tenn.
- Langley, R. B., A. Kleusberg, R. Santerre, P. Vaníček, and D. E. Wells (1986). "DIPOP: An interactive software package for precise positioning with GPS." Invited paper: ACSM Spring Convention, March, Washington, D.C.
- Langley, R. B., D. Parrot, R. Santerre, P. Vaníček, and D. E. Wells (1986). "The Spring 1985 GPS high-precision baseline test: Preliminary analyses with DIPOP." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. II, pp. 1073-1088.
- Langley, R. B., A. Kleusberg, D. Parrot, R. Santerre, P. Vaníček, and D. E. Wells (1985). "[Plans to do] DIPOP processing of observations from the spring 1985 GPS 'bake-off'." Invited paper: AGU Fall Meeting, December, San Francisco, Calif. (abstract: *EOS, Transactions, American Geophysical Union*, Vol. 66, No. 46, p. 844).
- Langley, R. B., G. Beutler, D. Delikaraoglou, B. G. Nickerson, R. Santerre, P. Vaníček, and D. E. Wells (1984). "Studies in the application of the Global Positioning System to differential positioning." July, Department of Surveying Engineering Technical Report No. 108, University of New Brunswick, Fredericton, N.B.

- Larden, D. R., and P. L. Bender (1982). "Preliminary study of GPS orbit determination accuracy achievable from worldwide tracking data." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1247-1252.
- Latham, D. C. (1983). "The Federal Radionavigation Plan from a Department of Defense perspective." *Sea Technology*, Vol. 24, No. 3, pp. 10-13.
- Le Cocq, C., and C. Boucher (1985). "Geodetic applications of the SERCEL TR55 GPS receiver." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 465-474.
- le Gouic, M. (1987). "Calibration of a range to range Loran chain with the use of Global Positioning System." *INSMAP 86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 349-356.
- Leavitt, L., and B. L. Peters (1988). "Low cost high accuracy integrated GPS inertial navigator for reconnaissance missions." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 381-388.
- Lee, Y. C. (1986). "Analysis of range and position comparison methods as a means to provide GPS integrity in the user receiver." *Proceeding of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 1-4.
- Lee, Y. C. (1988). "New concept for independent GPS integrity monitoring." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 2, pp. 239-254.
- Leeman, R. W., H. W. Janes, and A. Chrzanowski (1988). "GPS monitoring of ground subsidence: A case study." Presented at: Annual Convention of the Canadian Institute of Surveying and Mapping, May, Winnipeg, Manitoba.
- Leeman, R. W., H. D. MacAulay, and L. B. Fletcher (1985). "GPS—A user's critique." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 613-624.
- Leitinger, R. (1974). "Der Einfluß ionosphärischer Ausbreitungsfehler bei der geodätischen Anwendung von Navigationssatelliten." *Kleinhenbacher Berichte Band No. 17*, pp. 321-332.
- Leitinger, R. (1984). "Ionosphärische Ausbreitungsfehler." Unpublished manuscript: Institute für Meteorologie und Geophysik, Universität Graz, Graz, Austria, 11 pp.
- Leitinger, R., and G. K. Hartmann (1983). "Entfernungsfehler bei geodätischen Meßsystemen aufgrund von Atmosphäreinflüssen bei Signalfrequenzen größer als 100 MHz Teil II: Einfluß der Ionosphäre." *Kleinheubacher Berichte*, Bd. Nr. 26, pp. 129-137.
- Leitinger, R., and G.K. Hartmann (1977). "Zeit- und Breitenabhängigkeit von trans-ionosphärischen Ausbreitungsfehlern." *Kleinheubacher Berichte*, Bd. Nr. 20, pp. 267-276.
- Leitinger, R., and E. Putz (1987?). "Ionospheric refraction errors and observables." Internal report: Institut für Meteorologie und Geophysik, Universität Graz, Austria, 15 pp.
- Lennen, G. R., and P. Daly (1988). "A Navstar GPS C/A code digital receiver." *Proceedings of The Institute of Navigation Satellite Division Student Paper Competition*, Colorado Springs, Colo., 23 September, The Institute of Navigation, Washington, D.C., pp. 45-59.
- Lenorovitz, J. M. (1983). "ESA proposes NAVSAT civilian navigation." *Aviation Week & Space Technology*, 17 October, pp. 20-21.
- Lerner, E. J. (1985). "Navigating the highways by satellite." *Aerospace America*, Vol. 23, No. 9, September, pp. 34-36.
- Lert, P. (1984). "Geostar's super satnav system." *Professional Pilot*, April, pp. 81-84.

- Lichten, S. M. (1987). "Strategies for precision GPS orbit determination." Presented at: Second GPS Technology Workshop, 23 March, Jet Propulsion Laboratory, Pasadena, Calif.
- Lichten, S. M. (1987). "Use of combined pseudorange and carrier phase data types for orbit and baseline determination." Presented at: Second GPS Technology Workshop, 23 March, Jet Propulsion Laboratory, Pasadena, Calif.
- Lichten, S. M., S. C. Wu, J. T. Wu, and T. P. Yunck (1985). "Predicted TOPEX positioning accuracy with differential GPS techniques." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 853-862.
- Liebe, H. J. (1981). "Modeling attenuation and phase of radio waves in air at frequencies below 1000 GHz." *Radio Science*, Vol. 16, No. 6, pp. 1183-1199.
- Lighthart, V. H. M., and A. Wepster (1984). "Marine operational requirements: The merchant ship." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 141-155.
- Lighthart, V. H. M., and A. Wepster (1985). "Positioning fixing requirements for the merchant ship." *The (U.K.) Journal of Navigation*, Vol. 38, No. 1, pp. 122-132.
- Lilienblum, H. (1985). "Systemkonzeption und Geräteentwicklungen moderner kosmisch-geodätischer Meßverfahren." *Vermessungstechnik*, Vol. 33, No. 8, pp. 279-281.
- Lindlohr, W. (1988). "PUMA—Processing of Undifferenced GPS carrier beat phase Measurements and Adjustment computations." Technical Report No. 5, Institute of Geodesy, University of Stuttgart, Stuttgart, F.R.G., 65 pp.
- Lindlohr, W., and D. E. Wells (1985). "GPS design using undifferenced carrier beat phase observations." *Manuscripta Geodetica*, Vol. 10, No. 3, pp. 255-295.
- Lindlohr, W., D. E. Wells, and K. Doucet (1986). "First-order geodetic GPS network design: Some considerations." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. I, pp. 801-820.
- Liu, A. S., and P. E. Talley (1988). "Cesium beam phase and frequency measurements using GPS time transfer techniques." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 246-250.
- Logan, K. P. (1988). "A comparison: Static and future kinematic GPS surveys." *Journal of Surveying Engineering*, November, Vol. 114, No. 4, pp. 195-201. Also presented at the ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn.
- Logsdon, T. (1982). "Satellites bring new precision to navigation." *High Technology*, July, pp. 61-66.
- Lohmar, F. J. (1984). "Zur Berechnung ionosphärischer Refraktionskorrekturen für VLBI-Beobachtungen aus simultanen Dopplermessungen nach Satelliten." Dr.-Ing. dissertation, June, Geodätischen Instituten, Rheinischen Friedrich-Wilhelms-Universität, Bonn, F.R.G., 112 pp.
- Loomis, P., G. Kremer, and J. Reynolds (1988). "Correction algorithms for differential GPS reference stations." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 7 pp.
- Lorge, F. (1986). "Altitude aided GPS." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 349-353.
- Lowenstein, G., J. Phanos, and E. C. Rish (1986). "Requirements for sole means navigation in U.S. navy aircraft." *PLANS'86, Proceedings of the Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 488-495.
- Lucas, J. R. (1986). "Aerotriangulation without ground control." *Proceedings of the ACSM-ASPRS annual convention on Surveying, Instrumentation, and the Global Positioning System*, Washington, D.C., March, Vol. 2, pp. 207-218.

- Lucas, J. R., and G. L. Mader (1989). "Recent advances in kinematic GPS photogrammetry." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 78-92. Also presented at the ASCE Specialty Conference, GPS-88 Engineering Application of GPS Satellite Survey Technology, Nashville, Tenn., 11-14 May 1988.
- Lucas, R., R. Okkes, and W. Kriedte (1988). "Attitude determination with GPS." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 4 pp.
- Luse, J. D. (1985). "Geodesy from astrolabe to GPS—A navigator's view." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 2, pp. 101-113.
- Lyon, G. F. (1981). "Ionospheric effects on the SARSAT system." *Canadian Aeronautics and Space Journal*, December, Vol. 27, No. 4, pp. 327-335.
- Lyon, G. F., J. A. Fulford, and P. A. Forsyth (1983). "Ionospheric effects on space application systems." *Canadian Aeronautics and Space Journal*, December, Vol. 29, No. 4, pp. 315-326.
- MacDoran, P. F. (1979). "Satellite Emission Radio Interferometric Earth Surveying: SERIES-GPS geodetic system." *Bulletin Géodésique*, Vol. 53, No. 2, pp. 117-138.
- MacDoran, P. (1979). "Radiointerferometric geodetic applications of GPS transmissions." *Proceedings of the Second International Symposium on the Use of Artificial Satellites for Geodesy and Geodynamics*, Eds. G. Veis, E. Livieratos, Athens, Greece, 29 May-2 June 1978, The National Technical University, Athens, Greece, Vol. II, pp. 141-144.
- MacDoran, P. F. (1983). "SERIES-GPS, codeless pseudo-ranging positioning technology." *CSTG Bulletin* No. 5, Technology and Mission Developments, March, pp. 46-55.
- MacDoran, P. F., D. J. Spitzmesser, and L. A. Buennagel (1982). "SERIES: Satellite Emission Range Inferred Earth Surveying." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, 8-12 February, Las Cruces, N. Mex., Vol. II, pp. 1143-1164.
- MacDoran, P. F., J. H. Whitcomb, and R. B. Miller (1984). "Codeless GPS positioning offers sub-meter accuracy." *Sea Technology*, October. Also in *CSTG Bulletin* No. 7, December, pp. 192-194.
- MacDoran, P. F., R. B. Miller, L. A. Buennagel, and J. H. Whitcomb (1985). "Codeless systems for positioning with NAVSTAR-GPS." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 181-190.
- MacDoran, P. F., R. B. Miller, L. A. Buennagel, H. F. Fliegel, and L. Tanida (1984). "Codeless GPS systems for positioning of offshore platforms and 3D seismic surveys." *Navigation, Journal of The (U.S.) Institute of Navigation*, Summer, Vol. 31, No. 2, pp. 57-69. Also in *Global Positioning System*, Papers published in *Navigation*, reprinted by The Institute of Navigation, 1986, Vol. III, pp. 147-159.
- MacDoran, P. F., J. H. Whitcomb, R. B. Miller, L. A. Buennagel, and J. H. Lower (1987). "Codeless GPS positioning." *INSMAP 86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 215-222.
- Mader, G. L. (1986). "Decimeter level aircraft positioning using GPS carrier phase measurements." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. II, pp. 1311-1326.
- Mader, G. L. (1986). "Dynamic positioning using GPS carrier phase measurements." *Manuscripta Geodaetica*, Vol. 11, No. 4, pp. 272-277.
- Mader, G. L., and M. D. Abell (1985). "A comparison between Global Positioning System and very long baseline interferometry surveys in Alaska and Canada." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 549-556.
- Maher, R. A. (1984). "A comparison of multichannel, sequential, and multiplex GPS receivers for air navigation." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 31, No. 2, pp. 96-111. Also presented at the National Technical Meeting of The (U.S.) Institute of Navigation, San Diego, Calif., January. Also in *Global Positioning System*, Papers published in *Navigation*, reprinted by The Institute of Navigation, 1986, Vol. III, pp. 3-18.
- Mahmood, S. (1988). "GPS-translator processing system for ERIS." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 171-176.

- Maine, K. P. (1985). "A 406 MHz GPS/Emergency Location Transmitter (ELT) for SARSAT operations." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 897-902.
- Maine, R. E. (1981). "A marine NAVSTAR GPS receiver." *Proceedings of the Thirty-Seventh Annual Meeting of the (U.S.) Institute of Navigation*, Annapolis, Md., 9-11 June, pp. 54-59. Also in *Navigation, Journal of The Institute of Navigation*, Vol. 28, No. 4, pp. 286-293. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 36-43.
- Major, R. W., and R. M. Akita (1979). "Shipboard antenna tests for GPS." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 45-55.
- Malla, R. P., and S. C. Wu (1988). "Deriving a unique reference frame for GPS measurements." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 177-184.
- Malys, S. (1988). "Similarity transformation between NAVSAT and GPS reference frames." Presented at: American Geophysical Union Chapman Conference on GPS Measurements for Geodynamics, 19-22 September, Ft. Lauderdale, Fla., 17 pp.
- Marshall, E. (1983). "Steering clear of Sakhalin [Island]." *Science*, Vol. 222, pp. 303-304.
- Martel, J. H. (1982). "DoD radionavigation systems." Collected papers of the Surface Transportation Users Conference on Navigation, U.S.DoT, Washington, D.C., 16-17 November.
- Martin, E. H. (1980). "GPS user equipment error models." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 25, No. 2, pp. 201-210. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. 1, 1980, pp. 109-118.
- Masters, E. G., and A. Stolz (1985). "Multi-station GPS with orbit improvement." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 395-402.
- Matthews, N. F. (1984). "The collection of user charges for marine aids to navigation." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 335-337. Also in *The (U.K.) Journal of Navigation*, Vol. 38, No. 1, 1985, pp. 114-118.
- Maul, G. A. (1987). "Report on INSMAP'86: The international symposium on marine positioning." *Marine Geodesy (U.K.)*, Vol. 11, pp. 269-276.
- May, W. K. (1981). "The Federal Radionavigation Plan." *Proceedings of the Thirty-Seventh Annual Meeting of The (U.S.) Institute of Navigation*, Annapolis, Md., 9-11 June, pp. 89-96. Also in *Navigation, Journal of The Institute of Navigation*, Vol. 28, No. 3, pp. 231-246.
- McArthur, D., N. Beck, K. Lochhead, and D. Delikaraoglou (1985). "Precise relative positioning with the Macrometer V-1000 interferometric surveyor: Experiences at the Geodetic Survey of Canada." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 521-532.
- McCaskill, T. B., and J. A. Buisson (1985). "On-orbit frequency stability analysis of NAVSTAR GPS clocks and the importance of frequency stability to precise positioning." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 37-50.
- McDonald, K. D. (1988). "GPS receiver trends in technology: Equipment and performance." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 44 pp.

- McDonald, K. D., and R. L. Greenspan (1985). "A survey of GPS satellite system alternatives and their potential for precise positioning." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 457-472.
- McLellan, J. F., T. R. Porter, and P. S. J. Price (1989). "Pipeline deformation monitoring using GPS survey techniques." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 56-66.
- McMillan, J. C. (1987). "An integrated system for land navigation." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 1, pp. 43-63.
- McMillan, J. C. (1988). "An integrated land navigation system." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 221-229.
- McMillan, M. C. (1987). "An integrated system for land navigation." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 49-57.
- Medhurst, T. G. (1985). "Dependence of satellite Doppler measurements in Antarctica on ionospheric conditions." *The Australian Surveyor*, September, Vol. 32, No. 7, pp. 559-573.
- Melbourne, W. G. (1985). "The case for ranging in GPS-based geodetic systems." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, April, Rockville, Md., Vol. I, pp. 373-386.
- Melbourne, W. G., T. H. Dixon, and C. L. Thornton (1985). "GPS-based geodesy in Mexico and the Caribbean." *CSTG Bulletin* No. 8, pp. 182-190.
- Melbourne, W. G., T. H. Dixon, J. M. Davidson, and C. L. Thornton (1986). "GPS-based geodesy in California, Mexico and the Caribbean." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 219-229.
- Melton, W. C. (1981). "Time-of-arrival measurements possible with use of Global Positioning System." *Defense Electronics*, Vol. 13, No. 12, pp. 90-98.
- Menn, M. (1986). "Autonomous navigation for GPS via crosslink ranging." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 143-146.
- Merenyi, R. C., S. J. Brzezowski, and W. G. Heller (1985). "Radio interferometry in a moving-base application." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 783-788.
- Merminod, B. (1988). "Navigation from a static point of view." *Proceedings of The Institute of Navigation Satellite Division Student Paper Competition*, Colorado Springs, Colo., 23 September, The Institute of Navigation, Washington, D.C., pp. 60-77.
- Merminod, B. (1988). "Resolution of the cycle ambiguities." Report to: the Swiss Science Foundation, January, by School of Surveying, University of New South Wales, Australia, 57 pp.
- Merrell, R. L. (1986). "Application of GPS for transportation related engineering surveys." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. II, pp. 1165-1180. Also in *Bulletin Géodésique*, Vol. 60, No. 3, pp. 265-277.
- Merrell, R. L. (1986). "Automated GPS reference stations for Texas SDHPT surveys." *Proceedings of the ACSM-ASPRS annual convention on Surveying, Instrumentation, and the Global Positioning System*, Washington, D.C., March, Vol. 2, pp. 200-206.
- Merrifield, J. T. (1985). "Fifth-generation GPS receiver aims at commercial market." *Aviation Week & Space Technology*, 19 August, pp. 123-125.
- Mertikas, S. P. (1983). "Differential Global Positioning System navigation: A geometrical analysis." May, Department of Surveying Engineering Technical Report No. 95, University of New Brunswick, Fredericton, N.B.
- Mertikas, S. P. (1983). "Evaluation of some parameters affecting the performance of differential GPS navigation." Presented at: Differential GPS Workshop, 9-10 June, U.S. DoT, Cambridge, Mass.

- Mertikas, S. P. (1985). "Error distribution and accuracy measures in navigation." February, Department of Surveying Engineering Technical Report No. 113, University of New Brunswick, Fredericton, N.B.
- Mertikas, S. P. (1985). "A revolution in navigation: Global Positioning System (GPS)." *Technika Chronika*, Scientific Journal of the Technical Chamber of Greece, Vol. 5, No. 2, pp. 81-107. In Greek
- Mertikas, S. P., and D. E. Wells (1982). "Geometrical analysis of differential GPS navigation." *Proceedings of the National Marine Meeting of The (U.S.) Institute of Navigation*, Cambridge, Mass., 27-29 October, pp. 86-95.
- Mertikas, S. P., D. Delikaraoglou, and R. Santerre (1986). "Alert program for NAVSTAR Global Positioning System, Transit, LAGEOS, and Starlette satellites." June, Department of Surveying Engineering Technical Report No. 85, University of New Brunswick, Fredericton, N.B.
- Mertikas, S., C. Field, and D. E. Wells (1986). "GPS accuracy measures: Tests and proposals." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. I, pp. 663-682.
- Mertikas, S., C. Field, and D. E. Wells (1987). "Current issues in expressing uncertainty of position in GPS navigation." In: *INSMAP'86, Proceedings of the International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 357-370.
- Mertikas, S. P., C. Field, and D. Wells (1987). "The estimation of accuracy in navigation." Presented at: Canadian Hydrographic Conference, February, Burlington, Ontario.
- Mertikas, S., D. Wells, and P. Leenhouts (1985). "Treatment of navigational accuracies: Proposals for the future." *Navigation: Journal of The (U.S.) Institute of Navigation*, Spring, Vol. 32, No. 1, pp. 68-84.
- Meyer, T. E., G. T. Tennis, J. A. Slater, and B. J. DeNoyer (1986). "DMLAHTC GPS point positioning software: Initial results." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 18 April-2 May, University of Texas at Austin, Vol. II, pp. 1029-1044.
- Meyerhoff, S. L., and A. G. Evans (1986). "Demonstration of the combined use of GPS pseudorange and Doppler measurements for improved dynamic positioning." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. II, pp. 1397-1410.
- Meyerhoff, S. L., and A. G. Evans (1987). "Demonstration of the combined use of GPS pseudorange and Doppler measurements for improved dynamic positioning." In: *INSMAP'86, Proceedings of the International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 149-156.
- Mihaly, S., T. Borza, and I. Fejes (1985). "Interferometric processing of NNSS Doppler observations." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 495-508.
- Milbert, D. G. (1985). "A note on observation decorrelation, variances of residuals and redundancy numbers." *Bulletin Géodésique*, Vol. 59, No. 1, pp. 71-80.
- Milbert, D. G., and W. G. Kass (1985). "Network adjustment of correlated coordinate difference observations." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 657-666.
- Miller, B. (1974). "Satellite navigation network defined." *Aviation Week & Space Technology*, April, pp. 22-23.
- Miller, J., R. Tyce, and R. Edwards (1987). "Sea Beam mapping systems." *INSMAP 86, Proceedings of the International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 7-16.
- Miller, K. J. (1986). "Independent ground monitor coverage of GPS satellites for use by civil aviation." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 343-348.
- Milliken, R. J. and C. J. Zoller (1978). "Principle of operation of NAVSTAR and system characteristics." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 25, No. 2, pp. 95-106. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. I, 1980,

- pp. 3-14. Also in *Principles and Operational Aspects of Precision Position Determination Systems*, Ed. C.T. Leondes, NATO AGARDograph No. 245, 1979, pp. 4-1 to 4-12.
- Minkel, D. H. (1988). "GPS antenna—Field operation aspects: Equipment, set-up procedures, and error sources." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 9 pp. To be published in *Journal of Surveying Engineering*.
- Minkel, D. H. (1989). "Kinematic GPS land survey—Description of operational test and results." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 121-137. Also presented at the ASCE Specialty Conference, GPS-88 Engineering Application of GPS Satellite Surveying Technology, Nashville, Tenn., 11-14 May 1988.
- Montgomery, B. O., and C. R. Johnson (1982). "Operation and near-term applications of the TI 4100 NAVSTAR Navigator for the geophysical community." *Proceedings of the National Marine Meeting of The (U.S.) Institute of Navigation*, Cambridge, Mass., 27-29 October, pp. 81-85.
- Mooney, F. W. (1985). "Terrestrial evaluation of the GPS standard positioning service." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 4, pp. 351-369. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 275-293.
- Moore, P., and D.M. Page (1984). "Global civil satellite navigation systems: An airline operators view." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 239-242. Also in *The (U.K.) Journal of Navigation*, Vol. 37, No. 3, pp. 353-338.
- Moreau, R. (1986). "The Quebec 1985 TI 4100 test." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. II, pp. 1059-1072.
- Moreau, R., and M. Perron (1988). "A test of kinematic GPS combined with aerial photography: Organization, logistics, and results." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 6 pp.
- Moreau, R., G. Beutler, J. Leclerc, B. Labrecque, R.B. Langley, and R. Santerre (1985). "The Québec 1984 Macrometer™ test: Comparison of phase-difference processing and network solution methods." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 557-566.
- Morgan, P. (1987). "Models for GPS network design." *Australian Journal of Geodesy, Photogrammetry and Surveying*, December, Nos. 46 & 47, pp. 41-55.
- Morgan, P., C. Xing, C. Rogers, and D. R. Larden (1986). "Validation procedures in GPS surveys." *Australian Journal of Geodesy, Photogrammetry, and Surveying*, December, No. 45, pp. 1-35.
- Müller, A., J. Campbell, and F. J. Lohmar (1989). "Analysis of multipath effects in GPS data from European fiducial stations." Presented at the Fifth International Geodetic Symposium on Satellite Positioning, Las Cruces, N. Mex., 13-17 March, 10 pp.
- Nakiaboglu, M., K. P. Schwarz, E. J. Krakiwsky, B. Buffett, and B. Wanless (1984). "A multi-pass, multi-station approach to GPS orbital improvement and precise positioning." *PLANS' 84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 153-162. Also Geodetic Survey of Canada Contract Report No. 85-003, Energy, Mines and Resources Canada, Ottawa, Ontario, April, 1985.
- Naldrett, C. A., B. Ryan, and J. B. Schleppe (1986). "Offshore positioning using an integrated GPS-satellite and acoustic navigation system." *Proceedings of Canadian Petroleum Association Colloquium IV on Land, Sea and Space—Today's Survey Challenge*, Lake Louise, Alberta, April, pp. 307-324.
- Napier, M. E., and V. Ashkenazi (1987). "Modern navigation and positioning techniques." *The (U.K.) Journal of Navigation*, Vol. 40, No. 2, pp. 183-193.
- Napier, M. E., P. J. Summerfield, and V. Ashkenazi (1988). "High accuracy dynamic and kinematic positioning by GPS." *HYDRO 88, Proceedings of the Sixth Biennial International Symposium of The (U.K.) Hydrographic*

Society, Amsterdam The Netherlands, 15-17 November, The Hydrographic Society Special Publication 23, Dagenham, Essex, United Kingdom, pp. 207-214.

- Nard, G. (1986). "Reliable high accuracy long range real time differential GPS using a lightweight H.F. data link." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 377-387.
- Nard, G. (1987). "Accurate and reliable long-range dynamic radiolocation using GPS and DGPS—Geoloc hybridization." *The (U.K.) Journal of Navigation*, Vol. 40, No. 2, pp. 249-266.
- Nard, G. P. (1988). "GPS geodesy and kinematic topography measurements and data processing." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 22 pp. To be published in *Journal of Surveying Engineering*.
- Nard, G., and R. Gounon (1988). "SERCEL high-precision real-time differential GPS principles and results." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 528-533.
- Neily, C. M. (1979). "Addition of GPS navigation to an existing radio-inertial navigation system." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 142-143.
- Nesbø, I. (1986). "Comparisons between Transit/Hyperfix and GPS in the Barents Sea." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, pp. 1411-1428.
- Nesbø, I. (1987). "GRS 80 — The new height system." Presented at: NKTF meeting, 23-34 November, Norway, 8 pp.
- Nesbø, I. (1988). "Applications of GPS determined attitude for navigation." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 6 pp.
- Nesbø, I., and A. Bakken (1986). "A study on the use of the angular measurement capability of NAVSTAR GPS: Summary of field test." Internal report: A/S Kongsberg Vaapenfabrikk, Norway, 18 pp.
- Newcomer, J. D. (1986). "Increased productivity with GPS." *Proceedings of the ACSM-ASPRS annual convention on Surveying, Instrumentation, and the Global Positioning System*, Washington, D.C., March, Vol. 2, pp. 288-297.
- Nissim, W., and C. J. Zoller (1979). "Launch vehicles." In: *Principles and Operational Aspects of Precision Position Determination Systems*, Ed. C.T. Leondes, NATO AGARDograph No. 245, pp. 22-1 to 22-15.
- Noe, P. S., and H. Parsiani (1979). "NAVSTAR/GPS satellite selection for sequential receivers." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 177-182.
- Noe, P. S., and A. W. Yendrey (1979). "A collision avoidance system using NAVSTAR/GPS and ATRBS." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 157-160.
- Noe, P. S., K. A. Myers, and T. K. Wu (1976). "A navigation algorithm for the low-cost GPS receiver." *Proceedings of the Bicentennial National Aerospace Symposium of The (U.S.) Institute of Navigation*, Warminster, Pa., 27-28 April, pp. 137-141. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. I, 1980, pp. 166-172.
- Noe, P. S., V. T. Rhyne, and J. H. Painter (1980). "The C/A code GPS receiver at sea." *PLANS'80, Proceedings of the IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 48-50.
- Nolan, T. P., and M. H. Carpenter (1988). "The use of differential Navstar GPS to aid the visually impaired." *The (U.K.) Journal of Navigation*, Vol. 41, No. 2, pp. 203-211.
- Nordwall, B. D. (1988). "GPS applications, production grow as system gains acceptance." *Aviation Week & Space Technology*, 31 October, pp. 83-85.
- Norton, J. H. (1982). "NAVSTAR Global Positioning System." *International Hydrographic Review*, Vol. 59, pp. 23-30.

- Norton, T. (1987?). "Monitoring the precision of relative GPS positioning." Victoria State, Australia, 14 pp.
- Oakes, O. J., J. A. Buisson, and S. C. Wardrip (1982). "GPS time transfer receivers for the NASA transportable laser ranging network." *Proceedings of the Fourth International Workshop on Laser Ranging Instrumentation*, Ed. P. Wilson, Austin, Tex., October, 1981, Geodetic Institute, University of Bonn, F.R.G., Vol. II, pp. 338-375.
- Ohnishi, K. (1979). "On the optimal selection of satellites in GPS." In: *Principles and Operational Aspects of Precision Position Determination Systems*, Ed. C.T. Leondes, NATO AGARDograph No. 245, pp. 24-1 to 24-5.
- Okumu, B. M. (1987). "Long baseline determination using observations with Macrometer II prototype receivers." M.Eng. thesis, Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B.
- Olson, K. E. (1988). "Communication of differential GPS corrections using the LF, MF, and HF bands." *Proceedings of The Institute of Navigation Satellite Division Student Paper Competition*, Colorado Springs, Colo., 23 September, The Institute of Navigation, Washington, D.C., pp. 78-100.
- O'Neill, G. K. (1982). "Satellites instead, because TRIAD could make your Skyhawk weigh less, cost less and fly more safely and easily, that's why." *AOPA Pilot*, July, pp. 51-63.
- O'Neill, G. K. (1984). "The GEOSTAR system." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 339-345. Also in *The (U.K.) Journal of Navigation*, Vol. 37, No. 3, pp. 371-373.
- O'Neill, G. K. (1986). "Geostar." *Omni*, Vol. 8, no. 8, May, pp. 62-68.
- Oppenheimer, E. P., D. J. Duven, E. E. Westerfield, and J. B. McConnell (1985). "Real-time GPS tracking for Peacekeeper test flights." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 843-852.
- Ould, P. C., and R. J. Van Wechel (1981). "All-digital GPS receiver mechanization." *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Trevos, Pa., 8-10 April, pp. 12-20. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 28, No. 3, pp. 178-188. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 25-35.
- Ould, P. C., and R. J. Van Wechel (1986). "The modular digital approach to GPS receiver design." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 162-168.
- Pachelski, W., D. Lapucha, and K. Budde (1988). "GPS—Network analysis: The influence of stochastic prior information of orbital elements on ground station position measures." Technical Report No. 4, Institute of Geodesy, University of Stuttgart, Stuttgart, F.R.G., 107 pp.
- Pagiatakis, S. D., R. B. Langley, and P. Vaníček (1984). "Ocean tide loading: A global model for the analysis of the VLBI observations." In: *The Use of Artificial Satellites for Geodesy and Geodynamics, Proceedings of the Third International Symposium on the Use of Artificial Satellites for Geodesy and Geodynamics*, Athens, Greece, September, 1982, National Technical University of Athens, Vol. III, pp. 328-340.
- Paielli, R. (1987). "Range filtering for sequential GPS receivers." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 115-122.
- Palmer, R. J. (1989). "Precise navigation, guidance and control services within the agricultural community." *The Journal of Navigation*, January, Vol. 42, No. 1, pp. 1-10.
- Papo, H. B. (1988). "Datum definition in the GPS era." *CISM Journal ACSGC*, Vol. 42, No. 2, pp. 127-132.

- Papo, H. B., and A. Perelmutter (1985). "Should our concept of geodetic datum change with the introduction of GPS?" *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W.M. Welsch, L.A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 465-474.
- Paradissis, D., and D. E. Wells (1984). "GPS standardization—Status and problems." *Proceedings of the Meeting of the CSTG Subcommittee on Standards, International Symposium on Space Techniques for Geodynamics*, Sopron, Hungary, July. Also in *CSTG Bulletin* No. 7, December, pp. 71-95.
- Parker, W. S., and R. G. Bartholomew (1988). "Mapping, charting and geodesy in the DoD standard GPS receivers." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 145-152.
- Parkinson, B. W. (1979). "The Global Positioning System (NAVSTAR)." *Bulletin Géodésique*, Vol. 53, No. 2, pp. 89-108.
- Parkinson, B. W., and P. Axelrad (1987). "Simplified GPS integrity checking with multiple satellites." *Proceedings of the ION Forty-Third Annual Meeting*, Dayton, Ohio, 23-25 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 78-83.
- Parkinson, B. W., and P. Axelrad (1988). "Autonomous GPS integrity monitoring using the pseudorange residual." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 2, pp. 255-274.
- Parkinson, B. W., and K. T. Fitzgibbon (1986). "Optimal locations of pseudolites for differential GPS." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 70-82. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 33, No. 4, pp. 259-283.
- Parkinson, B. W., and K. T. Fitzgibbon (1989). "Aircraft automatic landing systems using GPS." *The (U.K.) Journal of Navigation*, Vol. 42, No. 1, pp. 47.
- Parkinson, B. W., and S. W. Gilbert (1983). "NAVSTAR: Global Positioning System — Ten years later." *Proceedings of the IEEE*, Vol. 71, No. 10, pp. 1177-1186.
- Parkinson, B. W., and C. R. Trimble (1986). "NAVSTAR to bring revolution in navigation." *Microwave Systems News & Communications Technology*, November, Vol. 16, No. 12, pp. 81-93.
- Parrot, D., R. B. Langley, A. Kleusberg, R. Santerre, P. Vaníček, and D. Wells (1986). "The Spring 1985 GPS high-precision baseline test: Very preliminary results." Invited paper: GPS Technology Workshop, 25 March, Jet Propulsion Laboratory, Pasadena, Calif.
- Pavlat, G. A., and M. C. Suman (1984). "Fibre-optic gyroscopes: Advances and future developments." *Navigation, Journal of The (U.S.) Institute of Navigation*, Summer, Vol. 31, No. 2, pp. 70-83.
- Pavlis, E. C., D. Delikaraoglou, and O. L. Colombo (1987). "Geodetic results of the analysis of GPS data from the Spring '85 experiment." Presented at: Spring Meeting of the American Geophysical Union, 18-21 May, Baltimore, Md., 14 pp.
- Payne, C. R. (1982). "NAVSTAR Global Positioning System: 1982." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 993-1022.
- Pelc, C. E. (1986). "GPS program status." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 26-29.
- Perreault, P. (1981). "Civilian receivers navigate by satellite." *Microwave Systems News*, Vol. 11, No. 1, January.
- Perreault, P. D. (1983). "STI GPS receivers." *CSTG Bulletin* No. 5, Technology and Mission Developments, March, pp. 25-31.
- Perry, R. B. (1985). "Multi-beam surveys of the U.S. Exclusive Economic Zone." *Hydrography & Technology in the Mid-80s*, Proceedings, 1st Biennial Canadian Hydrographic Conference, Halifax, N.S., 16-18 April, pp. 53-58.

- Pesec, P., E. Erker, G. Stangl, and K. Rinner (1986). "First GPS measurements in Austria." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1153-1164.
- Philip, D. R. C. (1988). "Satellite systems and U.K. offshore positioning." *The (U.K.) Hydrographic Journal*, April, No. 48, pp. 5-14.
- Phillips, A. H. (1984). "Geometrical determination of PDOP." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 31, No. 4, pp. 329-337.
- Pietraszewski, D. J. (1984). "A short and long term comparison of LORAN-C and civil NAVSTAR GPS signal stabilities." Excerpts of paper prepared for: 13th Annual LORAN-C Technical Symposium, Boston Mass., 31 October-2 November, by the U.S. Coast Guard, Groton, Conn., 17 pp.
- Pietraszewski, D., J. Spalding, C. Viehweg, and L. Luft (1988). "U.S. Coast Guard differential GPS navigation field test findings." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 1, pp. 55-72.
- Pike, R. D. (1984). "Satellite navigation — Pleasure craft requirements." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 167-170.
- Pilkington, J. D. H. (1984). "The use of SATNAV systems for precise time transfer." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 181-184.
- Polhemus, W. L. (1988). "The integration of GPS and Loran-C." *The (U.K.) Journal of Navigation*, Vol. 41, No. 3, pp. 410-416.
- Porter, J. P., and W. A. Hite (1984). "Overview/current status of the NAVSTAR Global Positioning System." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 42-45.
- Porter, J., P. Kruh, and B. Sprosen (1984). "GPS NAVSTAR system overview." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 11-23.
- Preiss, W. J. (1984). "Satellite positioning — The surveyor's operational requirement." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 173-177.
- Prescott, W. H., and J. Svarc (1986). "Precision of Global Positioning System measurements: Initial results." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 993-1002.
- Prescott, W. H., S. W. Krueger, and M. D. Zoback (1985). "Geodetic constraints on strain rates in the vicinity of the 1886 Charleston, South Carolina, earthquake." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 887-896.
- Prilepin, M. T. (1987). "Determination of ionospheric correction by group and phase velocity." Presented at: IAG Section II (Advanced Space Technology) Scientific Meeting, XIX General Assembly of IUGG, August, Vancouver, B.C., 14 pp.
- Prushan, V. H. (1987). "Radionavigation—The commercial market and user viewpoints." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 146-149.
- Pryor, L. (1989). "Transit—Status, policy, and plans." Presented at the Fifth International Geodetic Symposium on Satellite Positioning. Las Cruces, N. Mex., 13-17 March, 19 pp.
- Putkovich, K. (1980). "UNSO GPS and Transit programs." *PLANS'80, Proceedings of IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 152-153.

- Putkovich, K. (1980). "USNO GPS program." *Proceedings of the Twelfth Annual Precise Time and Time Interval Applications and Planning Meeting*, Goddard Space Flight Center, December, NASA Conference Publication 2175, pp. 387-415.
- Quek, S. H. (1983). "Spline smoothing of two-dimensional data series with precision estimation as applied to satellite navigation." Department of Surveying Engineering Technical Report No. 101, University of New Brunswick, Fredericton, N.B.
- Quek, S. H., M. Craymer, R. B. Langley, D. Parkhill, B. Arseneau, D. McArthur, and K. Lochhead (1989). "The development of a GPS active control point station." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 46-55. Also presented at the ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, Nashville, Tenn., 11-14 May 1988.
- Quek, S. H., R. B. Langley, B. Arseneau, W. J. Boyne, M. Craymer, A. Kleusberg, D. V. Parkhill, and D. E. Wells (1988). "Development of an active control point prototype." Final contract report to: Canada Centre for Surveying, Energy Mines and Resources Canada, Ottawa, February, by Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B.
- Radio Technical Commission for Maritime Services (1988). "RTCM recommended standards for radiodetermination satellite service." First draft: Report of Special Committee No. 108, Paper 28-88/SC 108-28, 21 March, RTCM, Washington, D.C., 21 pp.
- Rahnmoun, M. (1988). "Ein neues Korrekturmodell für Mikrowellen — Entfernungsmessungen zu Satelliten." Dr.-Ing. dissertation, Bayerischen Akademie der Wissenschaften, Deutsche Geodätische Kommission, Munich, F.R.G., Vol. C, 188 pp.
- Rapatz, P. J. V., R. Devlin, C. Barnes, and D. E. Wells (1988). "GPS specifications for urban surveys." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 14 pp.
- Rapatz, R., M. Craymer, A. Kleusberg, R. B. Langley, S. H. Quek, J. Tranquilla, and D. E. Wells (1987). "Procedures and specifications for urban GPS surveys." October, Department of Surveying Engineering Technical Report No. 131, University of New Brunswick, Fredericton, N.B.
- Remondi, B. W. (1984). "Using the Global Positioning System (GPS) phase observable for relative geodesy: Modeling, processing, and results." Ph.D. dissertation, Center for Space Research, University of Texas at Austin, May. Available from National Geodetic Information Center, N/CG17X2, Rockville, Md 20852, U.S.A.
- Remondi, B. W. (1985). "Global Positioning System carrier phase: Description and use." *Bulletin Géodésique*, Vol. 59, No. 4, pp. 361-377.
- Remondi, B. W. (1985). "Modeling the GPS carrier phase for geodetic applications." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 325-336.
- Remondi, B. W. (1985). "Performing centimeter accuracy relative surveys in seconds using GPS carrier phase." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 789-798.
- Remondi, B. W. (1986). "Performing centimeter-level surveys in seconds with GPS carrier phase: Initial results." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. II, pp. 1229-1250. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 4, pp. 386-400. Also in *Global Positioning System*, Papers published in *Navigation*, reprinted by The Institute of Navigation, 1986, Vol. III, pp. 194-208. Also NOAA Technical Memorandum NOS NGS-43, National Geodetic Information Center, Rockville, Md., October.
- Remondi, B. W. (1986). "Distribution of global position system ephemerides by the National Geodetic Survey." *Proceedings of the ACSM-ASPRS annual convention on Surveying, Instrumentation, and the Global Positioning System*, Washington, D.C., March, Vol. 2, pp. 219-225.
- Remondi, B. W. (1988). "High precision survey results using the ASHTECH XII GPS receiver." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 195-200.

- Remondi, B. W. (1988). "Kinematic and pseudo-kinematic GPS." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 7 pp.
- Remondi, B. W., and J. M. Ashjaee (1988). "Precision survey with the Ashtech XII GPS receiver." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 8 pp.
- Renzetti, N. A., and T. H. Dixon (1985). "A GPS measurement system for regional geodesy in the Caribbean." In: *Recent Crustal Movements*, Ed. H. Henneberg, Proceedings of the International Symposium, Maracaibo, Venezuela, February. *Tectonophysics*, 130, 1986.
- Rhodes, B. (1986). "Rockwell satellites, the GPS space segment." Report to: Australian military, October, by Rockwell International Collins Government Avionics Division, 27 pp.
- Rhodus, N. W., P. Massatt, and K. Rudnik (1986). "2-D and 3-D characterizations of GPS navigation service." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 481-487.
- Riemersma, G. (1988). "European GPS tracking network." *HYDRO 88, Proceedings of the Sixth Biennial International Symposium of The (U.K.) Hydrographic Society*, Amsterdam, The Netherlands, 15-17 November, The Hydrographic Society Special Publication 23, Dagenham, Essex, United Kingdom, pp. 231 (abstract only).
- Rino, C. L., M. D. Cousins, and J. A. Klobuchar (1981). "Amplitude and phase scintillation measurements using the Global Positioning System." *Proceedings of the Symposium on the Effect of the Ionosphere on Radiowave Systems*, Washington, D.C., April, Vol. 1, 9 pp.
- Rino, C. L., M. D. Cousins, N. B. Walker, and J. A. Klobuchar (1983?). "Ionospheric scintillation monitoring using GPS." 4 pp.
- Rizos, C., and A. Stolz (1985). "Force modelling for GPS satellite orbits." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. 1, pp. 87-98.
- Rizos, C., and A. Stolz (1988). "The UNSW satellite measurement analysis software system (USMASS)." *Australian Journal of Geodesy, Photogrammetry and Surveying*, December, Nos. 46 & 47, pp. 1-28.
- Rizos, C., A. Stolz, and E. G. Masters (1984). "Surveying and geodesy in Australia with GPS." *The Australian Surveyor*, Vol. 32, No. 3, pp. 202-225.
- Rizos, C., R. Govind, A. Stolz, and J. M. Luck (1987). "The Australian GPS orbit determination pilot project." *Australian Journal of Geodesy, Photogrammetry and Surveying*, December, No. 46 & 47, pp. 17-40.
- Robbins, J. E. (1988). "Reference trajectories from GPS measurements." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 1, pp. 89-103.
- Roerman, S. (1982). "GPS guidance concepts." Invited paper for: Military Microwaves '82 Conference, October, London, U.K., 7 pp.
- Roerman, S. D., and C. J. Marinello (1984). "GPS economies in marine survey applications." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 97-102.
- Rogers, D. C., and P. Christopher (1981). "Satellite orbits to relieve ionospheric scintillation." *Proceedings of the Symposium on the Effect of the Ionosphere on Radiowave Systems*, Washington, D.C., April, 10 pp.
- Rome, H. J., R. A. Reilly, and C. D. Ward (1980). "Enhanced noise immunity and error control in a fully integrated JTIDS/GPS receiver." *PLANS'80, Proceedings of the IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 477-493.
- Rose, E. J., S. C. Bose, J. T. Kouba, and D. A. Sobek (1986). "Cost/performance analysis of hybrid inertial/externally referenced positioning/orientation systems." *Proceedings of the Third International Symposium on Inertial Technology for Surveying and Geodesy*, Banff, Alberta, 16-20 September 1985,

Department of Surveying Engineering Publication No. 60005, University of Calgary, Calgary, Alberta, Vol. 2, pp. 757-776.

- Rosenthal, Y. (1981). "Satellite geometry considerations for low cost GPS user equipment." *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Trevos, Pa., 8 to 10 April, pp. 30-32.
- Rosetti, C. (1981). "Prospects for NAVSAT — A future worldwide civil navigation-satellite system." European Space Agency, Paris.
- Rosetti, C. (1986). "NAVSAT: A global satellite-based navigation system." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 5-12.
- Roth, B. D., and R. N. P. Singh (1986). "Applications of Navstar GPS to precision attitude determination." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. II, pp. 1345-1359.
- Rothacher, M., G. Beutler, W. Gurtner, A. Geiger, H. G. Kahle, and D. Schneider (1986). "The 1985 Swiss GPS campaign." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. II, pp. 979-992.
- Ruane, M., P. Enge, and K. Olson (1988). "Test experience using marine radiobeacons for DGPS communications." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 303-309.
- Ruland, R., and A. Leick (1985). "Application of GPS in a high precision engineering survey network." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 483-494.
- Rulon, T. D., and K. A. Berstis (1987). "Performance appraisal of an ARGO calibration system using GPS." *INSMAP 86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 233-242.
- Runkle, M. (1988). "GPS program update." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 1-3.
- Rush, C. M. (1979). "Transionospheric radio propagation." AGARD Lecture Series No. 99: Aerospace Propagation Media Modelling and Prediction Schemes for Modern Communications, Navigation and Surveillance Systems, AGARD-LS-99, July, AGARD, Neuilly sur Seine, France, pp. 4-1 to 4-28.
- Russell, S. S., and J. H. Schaibly (1978). "Control segment and user performance." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 25, No. 2, pp. 74-80. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. I, 1980, pp. 74-80.
- Rutscheidt, E. H., and B. D. Roth (1982). "The NAVSTAR Global Positioning System." *CSTG Bulletin* No. 4, June. International Coordination of Space Techniques for Geodesy and Geodynamics, Commission VIII, IAG, pp. 186-197.
- Saastamoinen, J. (1973). "Contributions to the theory of atmospheric refraction." *Bulletin Géodésique*, Nos. 105, 107, pp. 279-298, 13-34.
- Saastamoinen, J. (1973). "Introduction to practical computation of astronomical refraction." *Bulletin Géodésique*, Vol. 106, pp. 383-397.
- Salisbury, A. C. (1988). "GPS and horizontal datum problems." *Navigation News*, Sept./Oct., Vol. 3, No. 5, pp. 4.
- Salzmann, M. A., G. J. Husti, G. L. Strang van Hees, and P. J. G. Teunissen (1987). "NAVGRAV—A comprehensive combined navigation and gravimetry experiment on the North Sea: Objectives and first

experiences." *INSMAP 86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 243-248.

- Santerre, R. (1984). "Le système de positionnement global GPS." *Arpenteur-Géomètre*, Vol. 12, No. 2,3, pp. 10-12 and 8-9.
- Santerre, R. (1987). "Tropospheric refraction effects in GPS positioning." Graduate seminar report: December, Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B., 22 pp.
- Santerre, R. (1988). "DIPOP 2.0 (MPROC and PPROC) structure, modifications, and user guide." Department of Surveying Engineering Technical Memorandum TM-20, University of New Brunswick, Fredericton, N.B.
- Santerre, R. (1988). "The impact of the sky distribution of GPS satellites on precise positioning." Presented at: American Geophysical Union Chapman Conference on GPS Measurements for Geodynamics, 19-22 September, Fort Lauderdale, Fla., 10 pp.
- Santerre, R., A. Kleusberg, and G. Beutler (1985). "DIPOP: Software documentation." August, Department of Surveying Engineering Technical Memorandum TM-6, University of New Brunswick, Fredericton, N.B.
- Santerre, R., D. Delikaraoglou, T. Inzinga, R. Langley, and D. Wells (1984). "VECA: A vector adjustment software package for processing GPS observations." Department of Surveying Engineering Technical Memorandum TM-1, University of New Brunswick, Fredericton, N.B.
- Santerre, R., M. R. Craymer, A. Kleusberg, R. B. Langley, D. Parrot, S. H. Quek, P. Vaníček, D. E. Wells, and F. Wilkins (1987). "Precise relative GPS positioning with DIPOP 2.0." Presented at: IAG Section II 'Advanced Space Technology' Scientific Meeting, XIX General Assembly of IUGG, August, Vancouver, B.C.
- Schaffrin, B. (1983). "Varianz-Kovarianz-Komponenten-Schätzung bei der Ausgleichung heterogener Wiederholungsmessungen." Deutsche Geodätische Kommission, Reihe C, Dissertationen, Heft Nr. 282.
- Schaffrin, B. (1989). "Fiducial versus fixed points in the GPS network approach." Presented at the Fifth International Geodetic Symposium on Satellite Positioning, Las Cruces, N. Mex., 13-17 March, 12 pp.
- Schaffrin, B., and Y. Bock (1988). "A unified scheme for processing GPS dual-band phase observations." *Bulletin Géodésique*, Vol. 62, No. 2, pp. 142-160.
- Schaffrin, B., and E. Grafarend (1986). "Generating classes of equivalent linear models by nuisance parameter elimination— Applications to GPS observations." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 721-734. Also in *Manuscripta Geodaetica*, Vol. 11, No. 4, pp. 262-271.
- Schaibly, J. H., and M. D. Harkins (1979). "The NAVSTAR Global Positioning System control segment performance during 1978." *Proceedings of the Second International Geodetic Symposium on Satellite Doppler Positioning*, Austin, Tex., January, Applied Research Laboratories, University of Texas at Austin, Austin, Tex., Vol. II, pp. 1175-1192.
- Schaibly, J. H., and E. L. Lasley (1979). "Ephemeris and clock determination in GPS." In: *Principles and Operational Aspects of Precision Position Determination Systems*, Ed. C.T. Leondes, NATO AGARDograph No. 245, pp. 14-1 to 14-7.
- Scherrer, R. (1985). "The WM GPS primer." WM Satellite Survey Company, Heerbrugg, Switzerland.
- Schmidt, J. R. (1975). "Computer error analysis of tropospheric effects for the NAVSTAR Global Positioning System." MS thesis, U.S. Air Force Institute of Technology, GE/EE/75-7.
- Schmitt, A. F., and J. J. Bowden (1979). "Application of GPS to low cost tactical weapons." In: *Principles and Operational Aspects of Precision Position Determination Systems*, Ed. C.T. Leondes, NATO AGARDograph No. 245, pp. 20-1 to 20-10.
- Schneider, A. M., and J. L. Maida (1988). "A Kalman filter for an integrated Doppler/GPS navigation system." *PLANS '88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 408-415.
- Schödlbauer, A. (1985). "Local reference systems in geodetic survey under consideration of terrestrial and satellite positioning methods." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 713-722.

- Schutz, B. E., B. D. Tapley, P. A. M. Abusali, C. S. Ho, and H. J. Rim (1988). "GPS orbit determination: Experiments and results." Presented at: Spring meeting of the American Geophysical Union, Paper G21A-03, 13 pp.(abstract: *EOS, Transactions of the AGU*, Vol. 69, No. 16, p. 323).
- Schwartz, H. M. (1983). "Sensitivity analysis of an integrated NAVSTAR GPS/INS navigation system to component failure." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 30, No. 4, pp. 325-337.
- Schwarz, K. P., M. E. Cannon, and R. V. C. Wong (1987). "The use of GPS in exploration geophysics—A comparison of kinematic models." Presented at: IAG Section II (Advanced Space Technology) Scientific Meeting, XIX General Assembly of IUGG, August, Vancouver, B.C., 20 pp.
- Schwarz, K. P., C. S. Fraser, and P. C. Gustafson (1984). "Aerotriangulation without ground control." *International Archives of Photogrammetry and Remote Sensing*, Proceedings of ISPRS XV Congress, Vol. XXV, No. A1, pp. 237-250.
- Schwarz, K. P., R. V. C. Wong, J. Hagglund, and G. Lachapelle (1984). "Marine positioning with a GPS-aided inertial navigation system." Proceedings of the National Technical Meeting of The (U.S.) Institute of Navigation, San Diego, Calif., January.
- Scott, V. D., and J. R. Clynych (1986). "A proposed standardized exchange format for NAVSTAR GPS geodetic data." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 513-528.
- Scull, D. C. (1984). "The U.S. Federal Radionavigation Plan." Collected papers of NAV'84, Global Civil Satellite Navigation Systems conference, Royal Institute of Navigation, London, U.K., May, pp. 305-320. Also in *The (U.K.) Journal of Navigation*, Vol. 37, No. 3, pp. 305-315.
- Scull, D. C. (1986). "Status of the United States Federal Radionavigation Plan." *Proceedings of Canadian Petroleum Association Colloquium IV, Land, Sea and Space—Today's Survey Challenge*, Lake Louise, Alberta, April, pp. 363-376.
- Seeber, G. (1989). "GPS-Messungen in der jungvulkanischen Zone Nordost-Islands." *Zeitschrift für Vermessungswesen*, January, Vol. 114, No. 1, pp. 39-43.
- Seeber, G., and G. Wübbena (1985). "Geodetic measurements with TI 4100 GPS receivers." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W. M. Welsch, L. A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 487-502.
- Seeber, G., and G. Wübbena (1989). "Kinematic positioning with carrier phases and 'on the way' ambiguity solution." Presented at the Fifth International Geodetic Symposium on Satellite Positioning, Las Cruces, N. Mex., 13-17 March, 10 pp.
- Seeber, G., A. Schuchardt, and G. Wübbena (1987). "Precise GPS aided marine positioning developments and results." *INSMAP 86, Proceedings of the International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 187-196.
- Seeber, G., D. Egge, A. Schuchardt, J. Siebold, and G. Wübbena (1985). "Experiences with TI 4100 NAVSTAR navigator at the University of Hannover." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 215-226.
- Seesholtz, J. R. (1987). "The role of GPS in naval oceanography." *INSMAP 86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 175-278.
- Sennott, J. W. (1984). "A flexible GPS software development system and timing analyzer for present and future microprocessors." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 31, No. 2, pp. 84-95. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 19-30.
- Sennott, J. W., and D. Pietraszewski (1987). "Experimental measurement and characterization of ionospheric and multipath errors in differential GPS." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 168-172. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 2, pp. 160-173.

- Senus, W. J. (1982). "The Global Positioning System (GPS)—Geodetic receivers." *Proceedings of the International Symposium on Land Information at the Local Level*, Orono, Maine, August, University of Maine at Orono, pp. 220-232.
- Senus, W. J. (1984). "NAVSTAR Global Positioning System status." *HYDRO'84 Hands on to High Tech*, Proceedings of the U.S. National Ocean Service Hydrographic Conference, Rockville, Md., 25-27 April, pp. 69-71.
- Senus, W. J., and R. W. Hill (1981). "GPS application to mapping, charting and geodesy." *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Trevos, Pa., 8-10 April, pp. 51-55. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 28, No. 2, pp. 85-92. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 147-154.
- Sharma, S. (1988). "Error sources affecting differential or ground monitored operation of the NAVSTAR Global Positioning System." In: *ION GPS-88, Preliminary Proceedings of the First International Technical Meeting*, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 7 pp.
- Sharpe, R. T., P. H. Galyean, and A. W. Perga (1988). "The Magnavox 4800 product family: A modular design for GPS user equipment." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 323-328.
- Shaw, R. R. (1986). "Airline requirements for ATC in the 90s and beyond." *Navigation News*, March, Vol. 1, No. 2, pp. 22-26.
- Sheftel, D. J. (1979). "Outlook for Global Positioning System (GPS) in civil aircraft operations." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 161-162.
- Shively, C. (1979). "Real time simulation of a low-cost GPS navigator for nonprecision approaches." *Proceedings of the Thirty-Fifth Annual Meeting of The (U.S.) Institute of Navigation*, St. Louis, Mo., 18-21 June, pp. 13-19. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 26, No. 2, pp. 136-147. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. I, 1980, pp. 222-233.
- Shively, C. A. (1988). "Operational considerations for use of GPS integrity information in the national airspace system." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 334-340.
- Shor, A., and D. Chayes (1987). "Navigation for surveys of trans-pacific fiber-optic cables." *INSMAP 86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 397-406.
- Sideris, M., and K. Schwarz (1986). "The use of GPS and Doppler heights in NAVD." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1135-1152.
- Silver, M. (1988). "Modular hybrid avionic system for precision tactical weapons." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 402-407.
- Sims, M. L. (1982). "GPS geodetic receiver system." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1103-1122.
- Sims, M. L. (1985). "Phase center variation in the geodetic TI 4100 GPS receiver system's conical spiral antenna." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, April, Rockville, Md., Vol. I, pp. 227-244.
- Sklar, J. R., and L. L. Horowitz (1979). "Performance enhancement of the GPS receiver by data-free operation." In: *Principles and Operational Aspects of Precision Position Determination Systems*, Ed. C.T. Leondes, NATO AGARDograph No. 2435, pp. 18-1 to 18-6.

- Sliwa, L. (1985). "The re-adjustment of the first order local geodetic network in Franklin County, Ohio, incorporating the results of the Global Positioning System." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 695-704.
- Smit, J. H. M. (1988). "Sea gravimetry and Eötvös correction." Delft University of Technology Reports of the Faculty of Geodesy, Mathematical and Physical Geodesy, May, Delft, The Netherlands, 74 pp.
- Smith, B. A. (1983). "USAF awards multiyear contract in NAVSTAR buy." *Aviation Week & Space Technology*, 11 July, pp. 45-51.
- Smith, C. A., and K. W. Graves (1984). "Sensitivity of GPS acquisition to initial data uncertainties." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 31, No. 3, pp. 220-232. Also in *Proceedings of the National Technical Meeting of The (U.S.) Institute of Navigation*, San Diego, Calif., January 1984, pp. 125-131. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 31-43.
- Snay, R. A. (1986). "Network design strategies applicable to GPS surveys using three or four receivers." *Bulletin Géodésique*, Vol. 60, No. 1, pp. 37-50.
- Snively, L. O., and R. T. Richards (1986). "GEOSTAR positioning analysis." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 13-19.
- Soler, T., L. D. Hothem, and R. J. Fury (1986). "Precise geodetic surveying with code and carrier phase tracking GPS receivers." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. II, pp. 1205-1222.
- Spielvogel, L. Q., N. K. Saxena, and S. P. Tucker (1987). "Seafloor benchmark positioning system experiment interim report." *INSMAP 86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 337-348.
- Spilker, J. J. (1978). "GPS signal structure and performance characteristics." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 25, No. 2, pp. 121-146. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. I, 1980, pp. 29-54.
- Spilker, J. J. (1979). "Global Positioning System: Signal structure and performance characteristics." In: *Principles and Operational Aspects of Precision Position Determination Systems*, Ed. C. T. Leondes, NATO AGARDograph No. 245, pp. 5-1 to 5-35.
- Spinny, V. W. (1976). "Application of the Global Positioning System as an attitude reference for near-earth users." *Proceedings of the Bicentennial National Aerospace Symposium of The (U.S.) Institute of Navigation*, Warminster, Pa., 27-28 April, pp. 132-136.
- Spoelstra, T. A. T. (n.d.). "Correcting radio astronomy interferometry observations for ionospheric refraction." Internal report: Netherlands Foundation for Radio Astronomy, Dwingeloo, The Netherlands, 8 pp.
- Spoelstra, T. A. T. (1985). "Effects of amplitude and phase scintillations on decimeter wavelength observations at mid-latitudes." *Astronomy and Astrophysics*, Vol. 148, pp. 21-28.
- Spoelstra, T. A. T. (1986). "Correcting refraction in radio astronomy." Internal report: Netherlands Foundation for Radio Astronomy, Dwingeloo, The Netherlands, 43 pp.
- Spoelstra, T. A. T., and H. Kelder (1984). "Effects produced by the ionosphere on radio interferometry." *Radio Science*, Vol. 19, No. 3, pp. 779-788.
- Staelin, D. H. (1981). "Passive microwave techniques for geophysical sensing of the earth from satellites." *IEEE Transactions on Antennas and Propagation*, July, Vol. AP-29, No. 4, pp. 683-687.
- Stansell, T. A. (1978). "Civil marine applications of the Global Positioning System." *Magnavox Report MX-TM-3272-78 for Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 25, No. 2, pp. 224-235. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. I, 1980, pp. 132-143.

- Stansell, T. A. (1982). "Access charges and related issues for civil GPS users." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 29, No. 2, pp. 160-175.
- Stansell, T. A. (1983). "Meeting the GPS challenge." Reprinted from Magnavox's Points and Positions, February and May.
- Stansell, T. A. (1983). "Update on civil GPS." Magnavox Advanced Products and Systems Company, Torrance, Ca, September.
- Stansell, T. A. (1983). "GPS in the year 2000." Presented at the Special DoD Symposium on The Global Positioning System (GPS), Arlington, Va., April.
- Stansell, T. A. (1983). "Civil GPS from a future perspective." *Proceedings of the IEEE*, Vol. 71, No. 10, pp. 1187-1192.
- Stansell, T. A. (1984). "GPS marine user equipment." Collected papers of: Global Civil Satellite Navigation Systems Conference, May, The Royal Institute of Navigation, London, U.K., pp. 85-93. Magnavox Technical Paper MX-TM 3381-84.
- Stansell, T. A. (1986). "RTCM SC104 recommended pseudolite signal specification." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 33, No. 1, pp. 42-59. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 117-134.
- Stansell, T. A., S. M. Chamberlain, and F. K. Brunner (1985). "The first Wild-Magnavox GPS satellite surveying equipment: WM-101." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 147-160. Also in *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Eds. W. M. Welsch, L. A. Lapine, Munich, F.R.G., 1-3 July. Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol 2, pp. 503-524.
- Steeves, R. R. (1986). "Active control system — An overview." *The Canadian Surveyor*, Vol. 40, No. 2, pp. 219-220.
- Steeves, R. R., D. Delikaraoglou, and N. Beck (1986). "Development of a Canadian Active Control System using GPS." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1189-1204.
- Stein, B. A. (1985). "Satellite selection criteria during altimeter aiding of GPS." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 32, No. 2, pp. 149-157. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. III, 1986, pp. 226-234.
- Stein, B. A., and W. L. Tsang (1988). "Pseudolite-aided GPS: A comparison." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 329-333.
- Stein, B. A., and E. Wheaton (1986). "Equatorial sparing of the NAVSTAR/GPS satellite constellation." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 30-37.
- Stein, B. A., and E. Wheaton (1987). "Graphic depiction of dynamic satellite constellation accuracy/coverage over time." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 3, pp. 260-274.
- Stein, S. Z. (1980). "The Global Positioning System evaluator." *Proceedings of the Thirty-Sixth Annual Meeting of The (U.S.) Institute of Navigation*, Monterey, Calif., 23-26 June, pp. 11-16.
- Stein, W. L. (1986). "NAVSTAR Global Positioning System 1986 status and plans." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 37-50.
- Stiller, A. (1985). "Development of civilian GPS receivers in the Federal Republic of Germany for different applications." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W. M. Welsch, L. A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 525-544.
- Stöcker-Meier, E. (1988). "Relativistic models of phase and Doppler observations of electromagnetic signals." Internal report: Institute of Theoretical Geodesy, Rheinische Friedrich-Wilhelms-Universität, Bonn, F.R.G., 10 pp.

- Stöcker-Meier, E. (1988). "Untersuchungen zur Elektrodynamik in relativistischen geodätischen Modellen." Dr.-Ing. dissertation, January, Deutsche Geodätische Kommission, Bayerischen Akademie der Wissenschaften, Vol. C, No. 339, 68 pp.
- Stolz, A., E. G. Masters, and C. Rizos (1984). "Determination of GPS satellite orbits for geodesy in Australia." *Australian Journal of Geodesy, Photogrammetry and Surveying*, No. 40, June, pp. 41-52.
- Stolz, A., C. Rizos, E. G. Masters, and R. Eckels (1985). "GPS—Strategies for surveying and mapping in Australia." Collected papers of the 27th Australian Survey Congress, Alice Springs, Paper 13.
- Stolz, A., C. Rizos, B. Hirsch, B. E. Schutz, and B. D. Tapley (1987). "An experiment to determine regional and global GPS satellite orbits." *Australian Journal of Geodesy, Photogrammetry and Surveying*, December, Nos. 47 & 47, pp. 1-15.
- Strange, W. E. (1985). "High-precision, three-dimensional differential positioning using GPS." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 543-548.
- Strauss, R. (1985). "On the variation of the transformation parameters between GPS and the German horizontal network." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W. M. Welsch, L. A. Lapine, 1-3 July, Universität Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 545-552.
- Sturza, M. A. (1983). "GPS navigation using three satellites and a precise clock." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 30, No. 2, pp. 146-156. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 122-132.
- Sturza, M. A. (1984). "Commercial aviation GPS navigation set architecture." Presented at: National Technical Meeting of The (U.S.) Institute of Navigation, 18 January, San Diego, Calif., 5 pp.
- Sturza, M. A. (1987). "GPS ground proximity warning system." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 161-163.
- Sturza, M. A., and C. C. Richards (1988). "Embedded GPS solves the installation dilemma." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 374-380.
- Swift, E. R. (1985). "NSWC's GPS orbit/clock determination system." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 51-62.
- Swinney, E. (1986). "Applications of GPS in the commercial world." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 525-528.
- Szentsdi, A., and S. Mihály (1987). "World and European use of the GPS technique." Presented at: IUGG XIX General Assembly, 2-12 August, Vancouver, B.C., 13 pp.
- Tachita, R., K. Ikeda, A. Teranishi, J. Painter, and P. S. Noe (1988). "Low cost multi-channel GPS receiver." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 455-460.
- Taft, W. M. (1985). "Comprehensive GPS user policy (revised)." *CSTG Bulletin* No. 8, November, p. 218.
- Tammone, J. M., and C. Craig (1987). "An empirical method for verifying GPS oscillator requirements." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 111-114.
- Tazartes, D. A., and J. G. Mark (1988). "Integration of GPS receivers into existing inertial navigation systems." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 1, pp. 105-119.

- Teasley, S. P. (1986). "Flight test results of an integrated GPS and strapdown inertial system." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 199-205.
- Teasley, S. P., W. M. Hoover, and C. R. Johnson (1980). "Differential GPS navigation." *PLANS'80, Proceedings of IEEE Position Location and Navigation Symposium*, Atlantic City, NJ., December, pp. 9-16.
- Tennant, D. M. (1980). "NAVSTAR Global Positioning System (GPS) clock program: Present and future." *Proceedings of the Twelfth Annual Precise Time and Time Interval Application and Planning meeting*, Goddard Space Flight Center, December, NASA Conference Publication 2175, pp. 703-718.
- Texas Instruments (1984). "TI 4100 NAVSTAR Navigator instrumentation port-REV 2.0." Appendix A: TI 4100 NAVSTAR Owner's Manual, Lewisville, Tex., pp. A-1 to C-2. P/N 2791050-1.
- Thompson-Hickling Aviation Inc. (1988). "Radionavigation/location requirements for surface users in Canada." Final Contract Report for: Transportation Development Centre of Transport Canada, 10 November, Ottawa, Ontario, No. TP9452E, 115 pp.
- Thompson, T. (1980). "Performance of the SATRACK/Global Positioning System Trident I missile tracking system." *PLANS'80, Proceedings of IEEE Position Location and Navigation Symposium*, Atlantic City, NJ., December, pp. 445-449.
- Thompson, T. (1980). *Everyman's Guide to Satellite Navigation*. ARINC Research Corp.
- Thornton, C. L., W. G. Melbourne, and T. H. Dixon (1986). "NASA GPS-based geodetic program in Mexico and the Caribbean." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. II, pp. 1003-1018.
- Thornton, C. L., L. E. Young, S. C. Wu, and J. B. Thomas (1984). "GPS-based certification for the microwave landing system." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 256-263.
- Tranquilla, J. M. (n.d.). "Some comments on the occurrence of multipath and imaging problems in electronic navigation and positioning applications." Internal report: Department of Electrical Engineering, University of New Brunswick, Fredericton, N.B., 15 pp.
- Tranquilla, J. M. (1986). "Investigation in the use of phase data for high accuracy GPS differential kinematic positioning—Antenna effects." Research report for: Nortech Surveys (Canada) Inc., April, Calgary, Alberta.
- Tranquilla, J. M. (1986). "Multipath and imaging problems in GPS receiver antennas." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. I, pp. 557-572. Also presented at Symposium on Antenna Technology and Applied Electromagnetics, Winnipeg, Manitoba, August.
- Tranquilla, J. M. (1986). "Report on differential GPS communication techniques." Research report for: Canadian Hydrographic Service's NAVSTAR GPS Working Group, May, Ottawa, Ontario.
- Tranquilla, J. M. (1987). "Field experiments in NAVSTAR signal multipath, imaging and phase centre errors." Final contract report for: Canadian Hydrographic Service, February, Ottawa, Ontario.
- Tranquilla, J. M., and H. M. Al-Rizzo (1988). "Ice effects on satellite positioning system accuracy." Invited paper: Canadian Conference on Electrical and Computer Engineering, November, Vancouver, B.C.
- Tranquilla, J. M., and R. T. Bassett (1988?). "Spectral and correlation techniques for the identification and estimation of multipath errors in GPS pseudorange measurements." *Navigation, Journal of The (U.S.) Institute of Navigation*, Submitted for publication March 1988.
- Tranquilla, J. M., and R. T. Bassett (1988?). "Identification of multipath sources in GPS observations." *CISM Journal ACSGC*, Submitted for publication April 1988.
- Tranquilla, J. M., and S. R. Best (1986). "Phase centre considerations for the monopole antenna." *IEEE Transactions on Antennas and Propagation*, May, Vol. AP-34, No. 5, pp. 741-744.
- Tranquilla, J. M., and S. R. Best (1986). "The quadrifilar helix as a GPS receiver antenna." Presented at: Symposium on Antenna Technology and Applied Electromagnetics, August, Winnipeg, Manitoba, 11 pp.
- Tranquilla, J. M., and S. R. Best (1988?). "A study of the quadrifilar helix antenna for Global Positioning System (GPS) applications." *IEEE Transactions on Antennas and Propagation*, Submitted for publication March 1988.

- Tranquilla, J. M., and B. G. Colpitts (1986). "The microstrip antenna with finite ground plane for use with satellite positioning systems." Presented at: International IEEE AP-S Symposium and URSI meeting, June, Philadelphia, Pa., 11 pp.
- Tranquilla, J. M., and B. G. Colpitts (1988). "Characterization of GPS antennas: Measurement and processing." Invited paper: ANTEM '88 Symposium on Antenna Technology and Applied Electromagnetics, August, Winnipeg, Manitoba.
- Tranquilla, J. M., and B. G. Colpitts (1989). "GPS antenna design characteristics for high-precision applications." *Journal of Surveying Engineering*, February, Vol. 115, No. 1, pp. 2-14. Also presented at the ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, Nashville, Tenn., 11-14 May 1988.
- Tranquilla, J. M., R. Bassett, and B. G. Colpitts (1988). "Investigation into the use of absorber material for multipath control in GPS antennas." Invited paper: ANTEM '88 Symposium on Antenna Technology and Applied Electromagnetics, August, Winnipeg, Manitoba.
- Tranquilla, J. M., S. R. Best, and B. G. Colpitts (n.d.). "Phase centre considerations for the log-spiral antenna." Internal report: Department of Electrical Engineering, University of New Brunswick, Fredericton, N.B., 7 pp.
- Tranquilla, J. M., S. R. Best, and B. G. Colpitts (1986). "Selection and application criteria for GPS receiver antennas." Presented at: Joint Annual Meeting of the Geological Association of Canada, Mineralogical Association of Canada, and Canadian Geophysical Union, May, Ottawa, Ontario, 12 pp.
- Tranquilla, J. M., S. R. Best, and B. G. Colpitts (1986). "Testing and evaluation of the Adams-Russell GPS antenna." Research report for: Nortech Surveys (Canada) Inc., March, Calgary, Alberta.
- Tranquilla, J. M., J. P. Carr, and B. G. Colpitts (1988?). "GPS multipath field observations at land and water sites." *Navigation, Journal of The (U.S.) Institute of Navigation*, Submitted for publication April 1988.
- Tranquilla, J. M., B. G. Colpitts, and S. R. Best (1987). "Antenna sensitivities—Geodetic GPS applications." Invited paper: Fall Meeting of the AGU, December, San Francisco, Calif.
- Tranquilla, J. M., B. G. Colpitts, and J. P. Carr (1989). "Development of low-multipath antennas for TOPEX." Las Cruces, N. Mex., 13-17 March, 6 pp.
- Tranquilla, J. M., D. E. Wells, A. Kleusberg, and S. R. Best (1986). "Hydrographic applications of differential GPS: Communication channel considerations." Final contract report to: Nortech Surveys (Canada) Inc., February, Calgary, Alberta.
- Treder, A. J. (1987). "Autonomous navigation—When will we have it?" *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 96-105. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 2, pp. 93-114.
- Trimble Navigation (1985). "Accurate, low cost GPS positioning today from Trimble Navigation." *CSTG Bulletin* No. 8, November, pp. 138-142.
- Tscherning, C. C., and C. C. Goad (1985). "Correlation between time dependent variations of Doppler-determined height and sunspot numbers." *Journal of Geophysical Research*, May, Vol. 90, No. B6, pp. 4589-4596.
- Turner, R. N., F. van Graas, A. J. van Dierendonck, and Q. D. Hua (1986). "Architecture and performance of a real time differential GPS ground station." *Proceedings of the ION Forty-Second Annual Meeting*, Seattle, Wash., 24-26 June, The (U.S.) Institute of Navigation, Washington, D.C., pp. 61-69.
- United States Department of Defense (1982). "NAVSTAR Global Positioning System user charges." RTCM paper 74-82/SC 78-82, preliminary report to the Senate and House committees on Armed Services, March.
- United States Department of Defense (1984). "Global Positioning System user charges." Report to the Senate and House of Representatives, Committees on Appropriations and Armed Services, May.
- United States Department of Defense/Department of Transportation (1980). "Radionavigation plans and policy." Vol. I of *Federal Radionavigation Plan*, U.S. Department of Defense document #DoD-No.4650.4-P,I, and U.S. Department of Transportation document #DoT-TSC-RSPA-80-16,I, July.
- United States Department of Defense/Department of Transportation (1980). "Requirements." Vol. II of *Federal Radionavigation Plan*, U.S. Department of Defense document #DoD-No.4650.4-P,II, and U.S. Department of Transportation document #DoT-TSC-RSPA-80-16,II, July.
- United States Department of Defense/Department of Transportation (1980). "Radionavigation system characteristics." Vol. III of *Federal Radionavigation Plan*, U.S. Department of Defense document #DoD-No.4650.4-P,III, and U.S. Department of Transportation document #DoT-TSC-RSPA-80-16,III, July.

- United States Department of Defense/Department of Transportation (1980). "Radionavigation research, engineering and development." Vol. IV of *Federal Radionavigation Plan*, U.S. Department of Defense document #DoD-No.4650.4-P-IV, and U.S. Department of Transportation document #DoT-TSC-RSPA-80-16-IV, July.
- United States Department of Defense/Department of Transportation (1982). "Radionavigation plans and policy." Vol. I of *Federal Radionavigation Plan*, U.S. Department of Defense document #DoD-4650.4-P-I, and U.S. Department of Transportation document #DoT-TSC-RSPA-81-12-I, March.
- United States Department of Defense/Department of Transportation (1982). "Requirements." Vol. II of *Federal Radionavigation Plan*, U.S. Department of Defense document #DoD-4650.4-P-II, and U.S. Department of Transportation document #DoT-TSC-RSPA-81-12-II, March.
- United States Department of Defense/Department of Transportation (1982). "Radionavigation system characteristics." Vol. III of *Federal Radionavigation Plan*, U.S. Department of Defense document #DoD-4650.4-P-III, and U.S. Department of Transportation document #DoT-TSC-RSPA-81-12-III, March.
- United States Department of Defense/Department of Transportation (1982). "Radionavigation research, engineering and development." Vol. IV of *Federal Radionavigation Plan*, U.S. Department of Defense document #DoD-4650.4-P-IV, and U.S. Department of Transportation document #DoT-TSC-RSPA-81-12-IV, March.
- United States Department of Defense/Department of Transportation (1984). *Federal Radionavigation Plan*. Final Report: March 1982-December 1984. U.S. Department of Defense document #DoD-4650.4 and U.S. Department of Transportation document #DoT-TSC-RSPA-84-8. Available from NTIS, Document AD-A151 295.
- United States Department of Transportation (1982). "Navigation safety regulations; Radar requirements for certain tankers of 10,000 gross tons or more." U.S. Coast Guard, *Federal Register*, Vol. 47, No. 153, August 9, Rules and regulations, pp. 34388-34389.
- United States Department of Transportation (1982). "Electronic position fixing devices." U.S. Coast Guard, *Federal Register*, Vol. 47, No. 158, August 16, Proposed Rules, pp. 35531-35532.
- Valliant, H. D., G. Beutler, and R. B. Langley (1984). "A Canadian evaluation and analysis of the Macrometer™ interferometric surveyor." Presented at: Chapman Conference on Vertical Crustal Motion: Measurement and Modeling, October, Harpers Ferry, W. Va.
- Valliant, H. D., D. E. Wells, and D. McArthur (1984). "First Canadian experiences with the Macrometer™ GPS positioning system." Presented at: 11th Annual Meeting of the Canadian Geophysical Union, May, Halifax, N.S.
- van der Vegt, J. W. (1988). "Differential GPS: An efficient tool in photogrammetry." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 14 pp.
- van Dierendonck, A. J., B. Campeau, and R. McLean (1986). "A practical signal generator configuration for testing and qualifying differential GPS systems." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 399-405.
- van Dierendonck, A. J., S. S. Russell, E. R. Kopitzke, and M. Birnbaum (1978). "The GPS navigation message." In: *Global Positioning System*, Papers published in *Navigation*, reprinted by The (U.S.) Institute of Navigation, Vol. I, 1980, pp. 55-73.
- van Graas, F. (1988). "Sole means navigation through hybrid Loran-C and GPS." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 2, pp. 147-160.
- van Leeuwen, A., and L. M. Carrier (1979). "The Global Positioning System and its application in spacecraft navigation." *Proceedings of the National Aerospace Symposium of The (U.S.) Institute of Navigation*, Springfield, Va., 6-8 March, pp. 144-156.
- Vanderpool, J. (1988). "GPS satellite coverage characteristics of 21 and 24 space vehicle constellations for low earth orbit space based interceptors for the strategic defense initiative." *Proceedings of The Institute of Navigation Satellite Division Student Paper Competition*, Colorado Springs, Colo., 23 September, The Institute of Navigation, Washington, D.C., pp. 101-112.

- Vaniček, P. (1986). "The accuracy of GPS-determined positioning." *Proceedings of a Symposium on Geodetic Positioning for the Surveyor*, Cape Town, South Africa, September, University of Cape Town, pp. 133-142.
- Vaniček, P. (1986). "Are geodetic networks going to survive the space age?" *Proceedings of a Symposium on Geodetic Positioning for the Surveyor*, Cape Town, South Africa, September, University of Cape Town, pp. 63-70.
- Vaniček, P. (1988). "Hiking and biking with GPS: The Canadian perspective." Presented at: International GPS Workshop, April, Darmstadt, F.R.G.
- Vaniček, P., P. Tetreault, and M. Goadsby (1986). "Use of GPS in the maintenance of Ontario's geodetic networks." Contract report to: Ontario provincial government, Toronto, December, by School of Surveying, University of Toronto, Erindale Campus, Mississauga, Ont.
- Vaniček, P., R. B. Langley, D. E. Wells, and D. Delikaraoglou (1984). "Geometrical aspects of differential GPS positioning." *Bulletin Géodésique*, Vol. 58, No. 1, pp. 37-52.
- Vaniček, P., A. Kleusberg, R. B. Langley, R. Santerre, and D. E. Wells (1985). "On the elimination of biases in processing differential GPS observations." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 315-324.
- Vaniček, P., G. Beutler, A. Kleusberg, R. B. Langley, R. Santerre, and D. E. Wells (1985). "DIPOP: Differential POSitioning Program package for the Global Positioning System." September, Department of Surveying Engineering Technical Report No. 115, University of New Brunswick, Fredericton, N.B. Also Geodetic Survey of Canada Contract Report No. 85-005.
- Vaniček, P., G. Beutler, A. Chrzanowski, W. Faig, R. B. Langley, J. D. McLaughlin, and D. E. Wells (1984). "Implications of new space techniques in land surveying." Invited paper: Annual Convention of the Canadian Institute of Surveying, May, Québec City, Québec. Also translated into Polish as "Wplyw rozwoju metod kosmicznych na pomiary terenowe." *Przegląd Geodezyjny*, Vol. 56, No. 11, pp. 10-11.
- Vaniček, P., D. E. Wells, A. Chrzanowski, A. C. Hamilton, R. B. Langley, J. D. McLaughlin, and B. G. Nickerson (1983). "The future of geodetic networks." *Proceedings of the IAG Symposia*, Symposium d, The Future of Terrestrial and Space Methods for Positioning, Hamburg, F.R.G., August, The Ohio State University, Columbus, Ohio, Vol. 2, pp. 372-379. Also translated into Polish as "Przyslosc sieci geodezyjnych." *Przegląd Geodezyjny*, 1984, Vol. 56, No. 8-9, pp. 5-7.
- Vannicola, V. (1986). "Application of time transfer for Omega transmitters using NAVSTAR GPS." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 33, No. 3, pp. 216-222.
- Varnum, F., and J. Chaffee (1982). "Data processing at the Global Positioning System master control station." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1023-1040.
- Vincenty, T. (1987). "On the use of GPS vectors in densification adjustments." *Surveying and Mapping*, Vol. 47, No. 2, pp. 103-108.
- Vogel, M. A., T. J. Macdonald, and J. L. Covert (1981). "GPS/ inertial navigation system design evaluator." *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Trevos, Pa., 8-10 April, pp. 21-29.
- Wade, M., and M. Grewal (1988). "Analysis of a cascaded INS calibration filter." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 366-373.
- Wanless, B., G. Lachapelle, and D. McLintock (1988). "Long term repeatability of 100 to 200 km baselines utilizing GPS carrier phase data." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 22 pp. To be published in *Journal of Surveying Engineering*.
- Ward, P. (1980). "An advanced NAVSTAR GPS multiplex receiver." *PLANS'80, Proceedings of IEEE Position Location and Navigation Symposium*, Atlantic City, N.J., December, pp. 51-58.
- Ward, P. (1982). "An advanced NAVSTAR GPS geodetic receiver." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N.M., 8-12 February, Vol. II, pp. 1123-1142.
- Ward, P. (1983). "An advanced single-channel NAVSTAR GPS multiplex receiver with up to eight pseudo-channels." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 30, No. 1, pp. 34-50. Also in

Global Positioning System, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 78-94.

- Ware, R. H., C. Rocken, and K. J. Hurst (1986). "A Global Positioning System baseline determination including bias fixing and water vapor radiometer corrections." *Journal of Geophysical Research*, August, Vol. 91, No. B9, pp. 9183-9192.
- Ware, R. H., C. Rocken, K. J. Hurst, and G. W. Rosborough (1986). "Determination of the OVRO-Mojave baseline during the Spring 1985 GPS test." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1089-1102.
- Wassef, A. M. (1986). "Bias in GPS positioning induced by improper weighting of data." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 705-720.
- Wassef, A. M., and K. M. Kelly (1988). "Enhancing the usefulness of GPS two-frequency data for estimating the ionospheric correction." In: *ION GPS-88*, Preliminary Proceedings of the First International Technical Meeting, Colorado Springs, Colo., 21-23 September, Institute of Navigation, Institute of Navigation's Satellite Division, 7 pp.
- Wei Ziqing (1985). "GPS positioning software at The Ohio State University: Franklin County results." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 509-520.
- Wei Ziqing (1986). "GPS network adjustment using nondifferenced carrier phase measurements." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 785-800.
- Weisbrod, S., and L. J. Anderson (1959). "Simple methods for computing tropospheric and ionospheric refractive effects on radio waves." *Proceedings of the IRE*, October, Vol. 59, pp. 1770-1777.
- Weiss, M. (1984). "Position location with the NBS/GPS time transfer system." *PLANS'84, Proceedings of IEEE Position Location and Navigation Symposium*, San Diego, Calif., November, pp. 175-179.
- Weiss, M. A., and D. W. Allan (1986). "Using multiple reference stations to separate the variances of noise components in the Global Positioning System." *Proceedings of the IEEE 40th Annual Frequency Symposium*, Philadelphia, Pa., pp. 394-404.
- Wells, D. E. (1985). "Recommended GPS terminology." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 903-932. Also in *Proceedings of the Symposium on Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, Munich, F.R.G., July, pp. 179-208. Also in *Points and Positions*, Vol. 3, No. 4.
- Wells, D. E. (1986). "Introduction to GPS technology." *Proceedings of the Seventh Annual Workshop on Land Information Systems for the 1990s*, Fredericton, N.B., March, pp. 18-21.
- Wells, D. E. (1988). "Basic questions about GPS." *Proceedings of the First Global Positioning System Canadian User and Supplier Workshop*, 21-22 January, Ottawa, Ontario, pp. 7-12.
- Wells, D. E. (1988). "GPS signal structure, carrier phase observable, and receiver technologies." Invited paper: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn.
- Wells, D. E., and D. Delikaraoglou (1980). "NAVSTAR performance analysis." November, Department of Surveying Engineering Technical Report No. 75, University of New Brunswick, Fredericton, N.B.
- Wells, D. E., and D. Delikaraoglou (1982). "Models for combining single channel NAVSTAR / GPS with dead reckoning for marine positioning." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1259-1274.
- Wells, D. E., and D. Delikaraoglou (1982). "NAVSTAR data analysis." Contract report by: Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B.
- Wells, D. E., and D. Delikaraoglou (1983). "Development of BIONAV / GPS combined mathematical models." Final contract report to: Bedford Institute of Oceanography, Dartmouth N. S., March, by Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B.
- Wells, D. E., and S. T. Grant (1982). "An adaptable integrated navigation system: BIONAV." *Proceedings of the Canadian Petroleum Association Colloquium III on Petroleum Mapping and Surveys in the '80s*, Banff, Alberta, October, pp. 195-208.

- Wells, D. E., and G. Lachapelle (1982). "Impact of NAVSTAR / GPS on land and offshore positioning in the '80s." *Proceedings of the Canadian Petroleum Association Colloquium III on Petroleum Mapping and Surveys in the '80s*, Banff, Alberta, October, pp. 305-322.
- Wells, D. E., and S. H. Quek (1984). "Marine navigation studies with the TI 4100 NAVSTAR/GPS receiver." Final contract report for: Bedford Institute of Oceanography, March, by Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B.
- Wells, D. E., and J. Tranquilla (1986). "GPS users' equipment: Status and trends." *Proceedings of the Canadian Petroleum Association Colloquium IV: Land, Sea and Space—Today's Survey Challenge*, Lake Louise, Alberta, April, pp. 449-464.
- Wells, D. E., M. R. Craymer, and S. H. Quek (1987). "High latitude positioning." Final contract report to: Atlantic Geoscience Centre, Bedford Institute of Oceanography, Dartmouth, March, by Geodetic Research Laboratory, Department of Surveying Engineering, University of New Brunswick, Fredericton, N.B.
- Wells, D. E., D. Delikaraoglou, and P. Vaníček (1981). "Navigating with the Global Positioning System." Presented at: 74th Annual Meeting of the Canadian Institute of Surveying, 22 May, St. John's, Newfoundland.
- Wells, D. E., D. Delikaraoglou, and P. Vaníček (1982). "Marine navigation with NAVSTAR/Global Positioning System (GPS) today and in the future." *The Canadian Surveyor*, March, Vol. 36, No. 1, pp. 9-28.
- Wells, D. E., G. Lachapelle, and M. Eaton (1986). "Five years' experience with GPS navigation." *HYDRO'86, Proceedings of the Fifth Biennial International Symposium of The Hydrographic Society*, University of Southampton, U.K., December, pp. 11.1-11.12.
- Wells, D. E., G. Lachapelle, and S. T. Grant (1983). "Enhanced offshore positioning using current Global Positioning System capabilities." Presented at the International Association of Geodesy Symposium on Marine Geodesy, May, Tokyo, Japan.
- Wells, D. E., W. Lindlohr, and K. Doucet (1986). "First-order geodetic GPS network design: Some considerations." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. I, pp. 801-820.
- Wells, D. E., P. Vaníček, and D. Delikaraoglou (1981). "The application of NAVSTAR / GPS to geodesy in Canada. Pilot study." Department of Surveying Engineering Technical Report No. 76, University of New Brunswick, Fredericton, N.B.
- Wells, D. E., G. Lachapelle, M. Eaton, and S. Mertikas (1983). "Impact of the Global Positioning System on hydrography." *Proceedings of the Centennial Conference of the Canadian Hydrographic Service*, Ottawa, Ontario, April, pp. 69-77. Also in *Lighthouse*, Edition 29, April, 1984, pp. 41-57.
- Wells, D. E., W. Lindlohr, B. Schaffrin, and E. Grafarend (1987). "GPS design: Undifferenced carrier beat phase observations and the fundamental differencing theorem." October, Department of Surveying Engineering Technical Report No. 116, University of New Brunswick, Fredericton, N.B.
- Wells, D. E., A. Kleusberg, S. H. Quek, J. McCullough, and J. Hagglund (1985). "Precise ship's velocity from GPS: Some test results." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 799-808.
- Wells, D. E., D. A. Davidson, D. Delikaraoglou, R. B. Langley, B. G. Nickerson, and P. Vaníček (1983). "The comparative accuracies of Global Positioning System differential positioning modes." *Proceedings of the IAG Symposia*, Symposium d, The Future of Terrestrial and Space Methods for Positioning, Hamburg, F.R.G., August, The Ohio State University, Columbus, Ohio, Vol. 2, pp. 192-221.
- Wells, D. E., N. Beck, D. Delikaraoglou, A. Kleusberg, E. J. Krakiwsky, G. Lachapelle, R. B. Langley, M. Nakiboglu, K. P. Schwarz, J. M. Tranquilla, and P. Vaníček (1987). *Guide to GPS Positioning*. 2nd printing with corrections, Canadian GPS Associates, Fredericton, N.B., 600 pp.
- Wells, L. L. (1981). "Real-time missile tracking with GPS." *Proceedings of the National Aerospace Meeting of The (U.S.) Institute of Navigation*, Trevos, Pa., 8-10 April, pp. 56-61. Also in *Navigation, Journal of The Institute of Navigation*, Vol. 28, No. 3, pp. 224-230. Also in *Global Positioning System*, papers published in *Navigation*, reprinted by The Institute of Navigation, Vol. II, 1984, pp. 105-111.
- Wells, L. L. (1987). "Field test results on the use of translated GPS for Trident I." *Proceedings of the ION National Technical Meeting*, Anaheim, Calif., 20-23 January, The (U.S.) Institute of Navigation, Washington, D.C., pp. 132-137. Also in *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 34, No. 2, pp. 115-123.
- Welsch, W. M., and W. Oswald (1985). "Variance analysis of satellite networks." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 667-676.

- Welshe, R. G., J. W. Ladd, and J. D. Cain (1986). "Macrometer II™ portable GPS surveyor." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 431-438.
- Westfield, E. E. (1985). "The use of GPS for determining the position of small buoys." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 819-828.
- West-Vukovich, G., B. Scherzinger, L. Zywiell, H. Russell, and S. Burke (1988). "The Honeywell/DND helicopter integrated navigation system (HINS)." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 416-425.
- Wethington, R. L., and J. V. R. Paiva (1988). "Establishment of the Kansas City GPS control network." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 6 pp. To be published in *Journal of Surveying Engineering*.
- Whiting, L., J. Oswald, and J. Mitchell (1986). "Simple differential techniques using the Trimble 4000A GPS locator." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tx., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 503-512.
- Widnall, W. S., and I. J. Diaz Bobillo (1986). "Partial inertial aiding for low cost aircraft GPS navigators." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 354-361.
- Wiederholt, L., B. Fink, G. Liu, M. May, and R. Tafel (1986). "GPS UE data generator." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 192-198.
- Wild, U., G. Beutler, W. Gurtner, and M. Rothacher (1989). "Estimating the ionosphere using one or more dual frequency GPS receivers." Presented at the Fifth International Geodetic Symposium on Satellite Positioning, Las Cruces, N. Mex., 13-17 March, 13 pp.
- Williams, B. G. (1986). "GPS satellite orbit determination results from the March 1985 field test." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 289-302.
- Willis, P., C. Boucher, and C. Le Cocq (1986). "The I.G.N. geodetic software system for GPS data analysis." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1181-1188.
- Wilmes, H., and K. Kaniuth (1985). "Baseline determination in geodetic first order networks—A comparison of GPS results with ERS-1 and POPSAT simulations." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 533-542.
- Withington, F.N., and W.J. Klepczynski (1986). "Operational results of GPS in timekeeping." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 33, No. 1, pp. 60-71.
- Wong, K. W., A. G. Wiley, and M. Lew (1988). "GPS—Guided vision systems for real-time surveying." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 19 pp.
- Wong, R. V. C., and K. P. Schwarz (1982). "Offshore positioning with an integrated GPS/inertial navigation system." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. II, pp. 1275-1288.
- Wong, R. V. C., K. P. Schwarz, and M. E. Cannon (1988). "High-accuracy kinematic positioning by GPS-INS." *Navigation, Journal of The (U.S.) Institute of Navigation*, Vol. 35, No. 2, pp. 275-287.

- Wood, L. P. (1989). "Combined photogeodesy and GPS network." *Journal of Surveying Engineering*, February. Vol. 115, No. 1, pp. 160-163.
- Wooden, W. H. (1982). "A comparison of pole positions derived from GPS satellite and Navy Navigation Satellite observations." *Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning*, Las Cruces, N. Mex., 8-12 February, Vol. I, pp. 71-84.
- Wright, A. F. (1986). "Early experience of GPS in Europe." *Proceedings of FIG XVIII International Congress of Surveyors*, Toronto, Ontario, June, Commission 5, pp. 438-442.
- Wu, S. C. (1985). "Orbit determination of high-altitude earth satellites: Differential GPS approaches." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. II, pp. 809-818.
- Wu, S. C., and C. L. Thornton (1985). "Oasis—A new GPS covariance and simulation analysis software system." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 337-346.
- Wu, S. C., S. M. Lichten, W. I. Bertiger, J. T. Wu, J. S. Border, B. G. Williams, and T. P. Yunck (1986). "Precise orbit determination of GPS and Landsat-5." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 275-288.
- Wu, S. C., W. I. Bertiger, J. S. Border, S. M. Lichten, R. F. Sunseri, B. G. Williams, P. J. Wolff, and J. T. Wu (1986). "OASIS mathematical description, V. 1.0." Internal Report No. D-3139, 1 April, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, Calif., 147 pp.
- Wübbena, G. (1985). "Model and program developments for cm-positioning with GPS." *Proceedings, Inertial, Doppler and GPS Measurements for National and Engineering Surveys*, joint meeting of FIG Study Groups 5B and 5C, Munich, F.R.G., Eds. W. M. Welsch, L. A. Lapine, 1-3 July, Universitärer Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 20-2, Vol. 2, pp. 553-565.
- Wübbena, G. (1985). "Software developments for geodetic positioning with GPS using TI 4100." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 403-412.
- Wübbena, G. (1988). "GPS carrier phases and clock modeling." Presented at: International GPS Workshop, 10-13 April, Darmstadt, F.R.G., 11 pp.
- Wübbena, G. (1989). "The GPS adjustment software package — GEONAP — Concepts and models." Presented at the Fifth International Geodetic Symposium on Satellite Positioning, Las Cruces, N. Mex., 13-17 March, 10 pp.
- Wübbena, G., A. Schuchardt, and G. Seeber (1986). "Multistation positioning results with TI 4100 GPS receivers in geodetic control networks." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, 28 April-2 May, University of Texas at Austin, Austin, Tex., Vol. II, pp. 963-978.
- Wübbena, G., G. Seeber, and A. Schuchardt (1986). "Precise positioning results with TI 4100 GPS receivers on moving platforms." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. II, pp. 1269-1286.
- Xu Qifeng (1986). "GPS satellite orbit determination within a local area and their [sic] effect on precise positioning." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., 28 April-2 May, University of Texas at Austin, Vol. I, pp. 303-318.
- Young, L. E., R. E. Neilan, and F. R. Bletzacker (1985). "GPS satellite multipath: An experimental investigation." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, April, Rockville, Md., Vol. I, pp. 423-432.
- Young, L. E., S. C. Wu, and T. H. Dixon (1987). "Decimeter GPS positioning for surface element of sea floor geodesy system." *INSMAP 86, Proceedings, International Symposium on Marine Positioning*, Reston, Va., 14-17 October 1986, D. Reidel Publishing Company, Dordrecht, pp. 223-232.
- Young, L. E., D. J. Spitzmesser, T. K. Meehan, and J. M. Tranquilla (1988). "GPS antenna selection: Range and field test results." Invited paper: ANTEM '88 Symposium on Antenna Technology and Applied Electromagnetics, August, Winnipeg, Manitoba.

- Yunck, T. P., G. F. Lindal, and C. H. Liu (1988). "The role of GPS in precise earth observation." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 246-250.
- Yunck, T. P., S. C. Wu, and J. T. Wu (1986). "Strategies for sub-decimeter satellite tracking with GPS." *PLANS'86, Proceedings of IEEE Position Location and Navigation Symposium*, Las Vegas, Nev., November, pp. 122-128.
- Zachmann, G. W. (1988). "GPS accuracy for civil marine navigation." Presented at: 11 October, National Marine Electronics Association, Boston, Mass., 14 pp.
- Zeigler, J. H. (1988). "GPS geodetic reference system in Tennessee." *Journal of Surveying Engineering*, November, Vol. 114, No. 4, pp. 156-164.
- Zielinski, J. B. (1986). "Conclusions of accuracy analysis of GPS technique and its possible application to Wegener project." *Proceedings of the Fourth International Geodetic Symposium on Satellite Positioning*, Austin, Tex., April, University of Texas at Austin, Vol. II, pp. 1443-1452.
- Zielinski, J. B., and E. Butkiewicz (1985). "GPS satellite orbit determination from radio interferometry data." *Proceedings of the First International Symposium on Precise Positioning with the Global Positioning System*, Rockville, Md., April, Vol. I, pp. 121-126.
- Zilkoski, D. B., and L. D. Hothem (1988). "GPS satellite surveys and vertical control." Presented at: ASCE Specialty Conference, GPS-88 Engineering Applications of GPS Satellite Surveying Technology, 11-14 May, Nashville, Tenn., 30 pp. To be published in *Journal of Surveying Engineering*.
- Zilkoski, E. (1986). "GPS satellite surveys and vertical control." *Proceedings of FIG XVIII International Congress of Surveyors*, Toronto, Ontario, June, Commission 4, p. 97.
- Zygmunt, J. (1986). "Keeping tabs on cars and trucks." *High Technology*, September, pp. 18-23.
- Zywiell, J. Z., J. S. A. Hepburn, C. P. Doyle, and B. M. Scherzinger (1988). "NAVPACK—A package of simulation tools for integrated navigation applications." *PLANS'88, Proceedings of IEEE Position Location and Navigation Symposium*, Orlando, Fla., 29 November-2 December, pp. 470-475.