

DEPARTMENT OF THE INTERIOR U.S. GEOLOGICAL SURVEY

Geological Applications of Well Logs

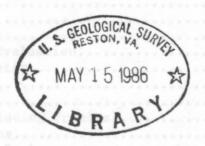
A Selected Bibliography of Well Logging Literature

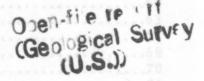
Published Through December 31, 1985

by

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Open-File Report 86-170





PREPARED IN COOPERATION WITH THE UNITED STATES DEPARTMENT OF ENERGY

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

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GEOLOGICAL APPLICATIONS OF WELL LOGS A SELECTED BIBLIOGRAPHY Stephen E. Prensky

The purpose of this bibliography is twofold, 1) to provide a basic, first-stop resource on well logging which the non-specialist, i.e., geoscientist, can consult and, 2) to provide a reference on geologic applications for the non-geoscientist, i.e., log analyst or petroleum engineer, as well as for the geoscientist. To achieve these goals this reference has been kept relatively simple by, a) including only papers written in English, b) excluding papers that are primarily mathematical, theoretical, experimental or instrumentation orientated, c) excluding abstracts and, d) limiting the size of this bibliography by placing emphasis on work published since 1975. It is hoped that significant contributions published prior to 1975 can be accessed through the texts and review papers which are listed. Of course the reader is invited to consult the references contained in these citations to obtain a more advanced or in-depth discussion on any subject. There has been some rudimentary cross-referencing of citations; however, time did not permit a more extensive effort.

Bibliographies of this type aré, of necessity, subjective works due, in part, to the compiler's own knowledge and professional orientation or bias and to the difficulty in locating and reviewing all published work. There is no single reference which contains a complete listing of publications on well-logging and applications. Petroleum Abstracts is the single best source for keeping up with new publications in the field, however, they are not a definitive source. Many important papers, particularly older ones, have not been picked up by their abstracting service and many citations listed in this bibliography never appeared in Petroleum Abstracts. The Bibliography and Index of Geology (Georef) is a good source for abstracts and papers published in foreign language, especially Russian, journals. The primary sources of well-logging literature are publications by

- 1. The Society of Professional Well Log Analysts (SPLWA)
 - a) The Log Analyst
 - b) annual symposium transactions
 - c) transactions of the European chapters' (London and Paris) symposiums
 - d) reprint volumes
 - e) chapter publications
- 2. Canadian Well Logging Society (CWLS)
 - a) annual Journal
 - b) biannual symposium transactions
- 3. Society of Petroleum Engineers (SPE)
 - a) Journal of Petroleum Technology
 - b) preprints from regional and national meetings
 - c) monographs
 - d) reprint volumes
- 4. Society of Exploration Geophysicists
 - a) Geophysics
- 5. Well-logging service companies, e.g., Dresser Atlas, Gearhart-Owens, Schlumberger, Welex.

This report is a revised and expanded version of U.S. Geological Survey Open-File Report 85-441 and includes approximately 1,000 citations. The author welcomes suggestions from readers regarding changes, improvements, and additions (new or older papers which may have be overlooked) for possible inclusion in future revisions.

Preparation of this report was funded, in part, by the Department of Energy's Western Tight Gas Sand Program.

Satemen, R.E., 1984, Cased-hole log analysis and reservoir performance Drawer Atlan, 1984, Well logging and interpretation techniques, the home stupagins ted. Substantiacs geology, Ath ed.: Golden, CO., Colorado School el Bines, part 3, chapter 22, p. 389-396.

1. FUNDAMENTALS OF WELL LOGGING AND WELL LOG INTERPRETATION

Total M. Grand H. TEXTS

- Asquith, G.B., 1985, Handbook of log evaluation techniques for carbonate reservoirs: Tulsa, American Association of Petroleum Geologists, Methods in Exploration No. 5, 47 p.
- Asquith, G.B. and Gibson, C.R., 1982, Basic well log analysis for geologists: Tulsa, American Association of Petroleum Geologists, Methods in Exploration Series, 216 p.
- Bateman, R.M., 1985, Openhole log analysis and formation evaluation: Boston, IHRDC Press, 647 p.
- Bateman, R.M., 1984, Log quality control: Boston, IHRDC Press, 398 p.
- Bateman, R.M., 1984, Cased-hole log'analysis and reservoir performance monitoring: Boston, IHRDC Press, 380 p.
- Brock, J., 1984, Analyzing your logs, volume 2 (advanced open hole log interpretation): Petro-media, Inc., 186 p.
- Brock, J., 1984, Analyzing your logs, volume 1 (fundamentals of open hole log interpretation): Petro-Media, Inc., 270 p.
- Chapman, R.E., 1983, Petroleum geology: New York, Elsevier, Chapter 6, p. 107-137.
- Debrandes, R., 1985, Encyclopedia of well logging: Houston, Gulf Publishing Company, 585 p.
- Dewan, J.T., 1983, Essentials of modern open-hole log interpretation: Tulsa, PennWell Books, 361 p.
- de Witte, L., 1972, Formation evaluation, in G.V. Chilingar, R.W. Mannon, H.R. Rieke, III, eds., Oil and gas production from carbonate rocks: New York, Elsevier, Chapter 4, 143-215.
- Dresser Atlas, 1984, Well logging and interpretation techniques, the home study course: Houston, Dresser Industries, publication 9333, variously paginated.
- Gilreath, J.A., 1977, Dipmeter, in L.W. LeRoy, D.O. LeRoy and J.W. Raese, eds., Subsurface geology, 4th ed.: Golden, CO., Colorado School of Mines, part 3, chapter 22, p. 389-396.
- Gomez-Rivero, O., 1982, Physical basis of well logging, in K.C. Jain and R.J.P. deFigueiredo, eds., Concepts and techniques in oil and gas exploration: Tulsa, Society of Exploration Geophysicists, Chapter 6, p. 161-198.

- Hallenburg, J.K., 1984, Geophysical logging for mineral and engineering applications: Tulsa, PennWell Books, 254 p.
- Hearst, J.R. and Nelson, P.H., 1985, Well logging for physical properties: New York, McGraw-Hill, 576 p.
- Helander, D.P., 1983, Fundamentals of formation evaluation: Tulsa, Oil and Gas Consultants International, 332 p.
- Hilchie, D.W., 1984, Reservoir description using well logs: Journal of Petroleum Technology, v. 36(7), p. 1067-1073. A discussion and reply published in 1984, Journal of Petroleum Technology, v. 36(12), p. 2195-2196.
- Hilchie, D.W., 1982, Advanced well log interpretation: Golden, CO., D.W. Hilchie, Inc., variously paginated.
- Hilchie, D.W., 1979, Old (pre-1958) electical log interpretation: Golden, CO., D.W. Hilchie Inc., 161 p.
- Hilchie, D.W., 1978, Applied openhole log interpretation: Golden, CO., D.W. Hilchie, Inc., variously paginated.
- Hilchie, D.W., 1977, Caliper and temperature logging, in L.W. LeRoy, D.O. LeRoy and J.W. Raese, eds., Subsurface geology, 4th ed.: Golden, CO., Colorado School of Mines, part 3, chapter 15, p. 342-346.
- Hobson, G.D. and Tiratsoo, E.N., 1975, Formation evaluation, in Introduction to petroleum geology: Beaconsfield, England, Scientific Press, Ltd., chapter 7, p. 176-204.
- Jain, K.C., 1982, Well logs in exploration, <u>in</u> K.C. Jain and R.J.P. deFigueiredo, eds., Concepts and techniques in oil and gas exploration: Tulsa, Society of Exploration Geophysicists, Chapter 7, p. 199-226.
- Kelley, D.R., 1969, A summary of major geophysical logging methods: Pennsylvania Geological Surey Bulletin M61, 82 p.
- Merkel, R.H., 1979, Well log formation evaluation: Tulsa, American Association of Petroleum Geologists, Continuing Education Course Note Series 14, 82 p.
- Moran, J.H. and Chemali, R., 1985, Focused resistivity logs in A.A. Fitch, ed., Developments in geophysical exploration methods—6: London, Elsevier Applied Science Publishers, p. 225-260.
- Pickett, G.R., 1977, Resistivity, radioactivity and acoustic logs, in L.W. LeRoy, D.O. LeRoy and J.W. Raese, eds., Subsurface geology, 4th ed.: Golden, CO., Colorado School of Mines, part 3, chapter 13, p. 304-336.
- Pirson, S.J., 1983, Geologic well log analysis: Houston, Gulf Publishing Company, 475 p.
- Pirson, S.J., 1963, Handbook of well log analysis for oil and gas formation evaluation: Englewood Cliffs, New Jersey, Prentice-Hall, 325 p.

- Ransom, R.C., ed., 1984, Glossary of terms and expressions used in well logging, 2nd ed.: Houston, Society of Professional Well Log Analysts, 116 p.
- Schlumberger, 1981, RFT--Essentials of pressure test interpretation: New York, Schlumberger Ltd., 77 p.
- Schlumberger, 1975, Cased hole applications: Houston, Schlumberger Well Services, 123 p.
- Schlumberger, 1974, Log interpretation volume 2--Applications: New York, Schlumberger Ltd., 116 p.
- Schlumberger, 1973, Production log interpretation: New York, Schlumberger Ltd., 91 p.
- Schlumberger, 1972, Log interpretation volume 1--Principles: New York, Schlumberger Ltd., 112 p.
- Selley, R.C., 1985, Methods of exploration, <u>in</u> Elements of petroleum geology: New York, W.H. Freeman & Company, Chapter 3, p. 37-131.
- Sengel, E.W., 1984, Well logging handbook: Oklahoma City, Institute for Energy Development (IED), 168 p.
- Serra, O., 1985, Fundamentals of well-log interpretation volume
 2--interpretation of various well logs [Diagraphies differees Bases de
 l'interpretation]: Pau, France, Bulletin des Centres de Recherches
 Exploration-Production Elf-Aquataine Memoire 7, 632 p. In French, not yet
 translated into English. The best single reference on application of well
 logs to determination of facies and depositional environments,
 sedimentology, (sedimentary structures, diagenesis and compaction),
 structural geology, and fractures.
- Serra, O., 1984, Fundamentals of well-log interpretation volume 1--the acquisition of data: New York, Elsevier, Developments in Petroleum Science 15A, 423 p.
- Society of Professional Well Log Analysts, Houston Chapter, 1979, The art of ancient log analysis: Houston, Society of Professional Well Log Analysts, 131 p. + reprints of 22 classic papers. Interpretation of old electric (normal and lateral) logs.
- Wyman, R.E., 1981, Well logging, in S.P. Parker, ed., Encyclopedia of energy, 2nd ed.: New York, McGraw-Hill, p. 778-785.

Graff. M. and Knolen, D., 1915, Graing, part ?- analytical aspects of masses

II. GENERAL LOGGING AND ELECTRIC LOGGING (See also 19. Mineral exploration)

- Alger, R.P., 1966, Interpretation of electric logs in fresh water wells in unconsolidated formations, <u>in</u> 7th annual logging sumposium transactions, paper CC: Houston, Society of Professional Well Log Analysts, p.
- Biella, G., Lozej, A. and Tabacco, I., 1983, Experimental study of some hydrogeophysical properties of unconsolidated porous media: Ground Water, v. 21(6), November-December, p. 741-751. A discussion of the limitations of Archie's equation.
- Borai, 1985, A new correlation for cementation factor in low-porosity carbonates: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14401, 8 p.
- Borai, A.M. and Muhsin, M.A., 1985, LDT tool give improved formation evaluation: Oil and Gas Journal, v. 83(27), July 8, p. 60-63.
- Bosworth, A.F., 1972, Log calibrations surface and downhole: Canadian Well Logging Society Journal, v. 5(1), p. 39-68.
- Brown, R.J.S. and Neuman, C.H., 1982, The nuclear magnetism log--A guide for field use: The Log Analyst, v. 23(5), September-October, p. 4-9.
- Brown, R.J.S. and Neuman, C.H., 1980, Processing and display of nuclear magnetism logging signals—Application to residual oil determination, in 21st annual logging symposium transactions, paper K: Houston, Society of Professional Well Log Analysts, 25 p.
- Busch, J.M., Fortney, W.G. and Berry, L.N., 1985, Determination of lithology from well logs by statistical analysis: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14301, 11 p.
- Canadian Well Logging Society (CWLS), annually (1968-1985), Journal:
- Canadian Well Logging Society (CWLS), biannually (1968-1985), Well Logging Symposium Transactions:
- Conaway, J.G., , 1983, Digital filtering of geophysical logs in A.A. Fitch, ed., Developments in geophyscial methods--5: London, Applied Science Publishers, p. 65-105.
- Connolly, E.T. and Reed, P.A., 1983, Full spectrum formation evaluation: Canadian Well Logging Society Journal, v. 12(1), p. 23-69.
- Craft, M. and Keelan, D., 1985, Coring, part 7--Analytical aspects of sidewall coring: World Oil, v., September, p. 77-90.

- Ditzhuijen, P.J.D. and Massan, D., 1984, A multilog-evaluation package using linear programming techniques to evaluate porosity and lithology in hydrocarbon bearing complex lithologies in 5th offshore South East Asia conference [February 21-24, Singapore], proceedings, SPE-12376: Dallas, Society of Petroleum Engineers, 17 p.
- Donaldson, E.C. and Bizerra, M.J., 1985, Relationship of wettability to the Archie saturation component, in 3rd international UNITAR/UNDP heavy crude and tar sands conference preprints [Long Beach, California, July 22-31, 1985]: New York, United Nations Institute for Training and Research, Information Center for Heavy Crude and Tars., v. 2, p. 664-684.
- Dowdle, W.L. and Cobb, W.M., 1974, Static formation temperature from well logs—an empirical method: Dallas, Society of Petroleum Engineers, 49th annual meeting [Houston] preprint SPE-5036. Later published in 1975, Journal of Petroleum Technology, v. 27(11), p. 1326-1330. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. V-61-V-65.
- Dresser Atlas, 1984, Wireline services catalog: Houston, Dresser Atlas Industries, publication 9102, 62 p. A brief discussion with illustrations of the various logging devices and processing services currently available.
- Ellis, D. and Boucau, J., 1983, The future development of logging techniques: Oil and Enterprise, n. 2, September, p. 60-66.
- Fertl, W.H., 1983, Advances in well logging and well interpretation, in 11th world petroleum congress, proceedings, v. 3: New York, John Wiley, p. 341-354. Later published in condensed form in 1984, Oil and Gas Journal, v. 82(16), April 16, p. 85-91.
- Finklea, E.E., 1981, Advanced logging techniques, <u>in</u> Workshop proceedings: world oil and natural gas supplies, June 1979: Electric Power Research Institute, WS-79-182, Paper 3-11, 23 p.
- Hartley, K.B., 1979, Evaluation of wireline down-log information and effects of increased log speeds on data quality: Dallas, Society of Petroleum Engineers, 54th annual meeting (Las Vegas) preprint SPE-8363. Later published in 1980, Journal of Petroleum Technology, v. 32(7), p. 1151-1160. Also published in 1981, Oil and Gas Journal, v. 79(8 and 9), February 23, p. 66-76, and March 2, p. 99-100.
- Helgoy, R., 1984, Prediction techniques from logging tools—are the results confirmed by testing?: Norwegian Petroleum Scoiety offshore North Seas conference [August 21-24, Stavanger] paper G4, 25 p.
- Jennings, H.Y. and Timur, A., 1973, Significant contributions in formation evaluation and well testing: Journal of Petroleum Technology, v. 25(12), p. 1432-1446, SPE-4704.
- Keelan, D., 1985, Coring, part 8--Plug and full diameter analysis: World Oil, v., November, p. 103-111.

- Kersey, D.G., 1986, Coring, part 9-Geological aspects: World Oil, v., January, p. 103-108.
- Kerzner, M.G. and Frost, E., Jr., 1982, Blocking-A new technique for well log interpretation: Dallas, Society of Petroleum Engineers, 57th annual meeting (New Orleans) preprint SPE-11093, 14 p. Later published in 1984, Journal of Petroleum Technology, v. 36(2), p. 267-275.
- Kwader, T., 1984, The use of geophysical logs for determining formation water quality, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 833-842.
- Looyestijn, W.J., 1982, Deconvolution of petrophysical logs--Applications and limitations, <u>in</u> 23rd annual logging symposium transactions, paper W: Houston, Society of Professional Well Log Analysts, 20 p. A discussion of improving the vertical resolution of different logging tools.
- Maciula, E.A. and Cochrane, J.E., 1967, Quantitative use of calibration data to correct miscalibrated well logs: Dallas, Society of Petroleum Engineers, 42nd annual meeting (Houston) preprint SPE-1940. Later published in 1968, Journal of Petroleum Technology, v. 20(7), p. 663-670.
- McCall, C., 1975, The effect of hydrocarbons on the SP opposite sands, in 12th annual logging symposium transactions, paper C: Houston, Society of Professional Well Log Analysts, 12 p.
- Neuman, C.H. and Brown, R.J.S., 1981, Applications of nuclear magnetism logging to formation evaluation: Dallas, Society of Petroleum Engineers, 56th annual meeting (San Antonio) preprint SPE-10108, 10 p. Later published in 1982, Journal of Petroleum Technology, v. 34(12), p. 2853-2862.
- Reiter, M., Mansure, A.J. and Peterson, B.K., 1980, Precision continuous temperature logging and comparison with other types of logs: Geophysics, v. 45(12), p. 1857-1868.
- Roux, B., Sanyal, S.K. and Brown, S.L., 1980, An improved approach to estimating true reservoir temperature from transient temperature data, in 50th California regional meeting proceedings, SPE-8888: Dallas, Society of Petroleum Engineers, p.?. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. V-53-V-60.
- Roy, K.K. and Saha, A., 1975, Discussion on SP log interpretation: Canadian Well Logging Society Journal, v. 8(1), p. 41-46.
- Ruhovets, N. and Oliver, D.W., 1985, Log analysis problems and solutions in complex lithology reservoirs: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14187, 12 p.

- Safinya, K. Habashy, T., Randall, C., Clark, B., Perez-Falcon, A., 1985, Experimental and theoretical study of the Electromagnetic Propagation Tool in layered and homogeneous media: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14188, 17 p.
- Schlumberger, 1985, Log interpretation charts: New York, Schlumberger Ltd., 112 p.
- Schlumberger, 1983, Openhole services catalog: New York, Schlumberger Ltd., 72 p. A brief discussion with illustrations of the various logging devices and processing services currently available.
- Schulze, R.P., Ives, G.L. and Smalley, E.A., 1985, Evaluation of low-resistivity Simpson series of formations: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14282, 8 p.
- Segesman, F.F., 1980, Well-logging method: Geophysics, v. 45(11), p. 1667-1684. A concise history of well logging, see references.
- Shen, L.C., 1985, Problems in dielectric-constant logging and possible routes to their solution: The Log Analyst, v. 26(6), November-December, p. 14-25.
- Shen, L.C., Savre, W.C., Price, J.M. and Athavale, K., 1985, Dielectric properties of reservoir rocks at ultra-high frequencies: Geophysics, v. 50(4), p. 692-704. An important paper on the interpretation of dielectric (EPT) logs.
- Silva, P. and Bassiouni, Z., 1981, A new approach to the determination of formation water resistivity from the SP log, <u>in</u> 22nd annual logging symposium transactions, paper G: Houston, Society of Professional Well Log Analysts, 15 p.
- Snyder, D.D. and Fleming, D.B., 1985, Well logging-A 25-year perspective: Geophysics, v. 50(12), p. 2504-2529. See references.
- Society of Petroleum Engineers, 1971, Well Logging: Dallas, Society of Petroleum Engineers, Reprint Series 1, 410 p. Contains 26 classic papers on basic tool principles and application.
- Society of Professional Well Log Analysts (SPWLA), bimonthly (1960-1985), The Log Analyst: Houston, Society of Professional Well Log Analysts
- Society of Professional Well Log Analysts (SPWLA), Annually (1960-1985), Logging Symposium Transactions: Houston, Society of Professional Well Log Analysts
- Society of Professional Well Log Analysts (SPWLA), Biannually, European Formation Evaluation Symposium Transactions: London or Paris chapters of SPWLA
- Society of Professional Well Log Analysts (SPWLA), irregular, Reprint volumes: Houston, Society of Professional Well Log Analysts

- Stein, N., 1975, Mechanical properties of friable sands from conventional log data: Dallas, Society of Petroleum Engineers, 50th annual meeting [Dallas] preprint SPE-5500. Later published in 1976, Journal of Petroleum Technology, v. 28(7), p. 757-763. Discussion and reply published in 1976, Journal of Petroleum Technology, v. 28(11), p. 1303-1304.
- Swanson, B.F., 1985, Microporosity in reservoir rocks--Its measurement and influence on electrical resistivity, in 26th annual logging symposium transactions, paper F: Houston, Society of Professional Well Log Analysts, 17 p. Later published in 1985, The Log Analyst, v.26(6), November-December, p. 42-52.
- Threadgold, P., 1971, Some problems and uncertainties in log interpretation, in 13th annual logging symposium transactions, paper, W: Houston, Society of Professional Well Log Analysts, 19 p. Later reprinted in 1972, The Log Analyst, v. 12(2), March-April, p. 3-11.
- Timur, A., 1982, Open hole well logging, in International petroleum conference [Beijing] proceedings, SPE-10037: Dallas, Society of Petroleum Engineers, p. 639-674. Later published in condensed form 1982, Advances in well logging: Journal of Petroleum Technology, v. 34(6), p. 1181-1185.
- Timur, A. and Toksoz, M.N., 1985, Downhole geophysical logging: Annual Reviews of Earth and Planetary Science, v. 14, p. 315-344.
- Whittaker, A., ed., 1985, Mud logging, principles and interpretations: Boston, International Human Resources Development Corporation, 92 p.
- Worthington, P.F., Pallatt, N. and Toussaint-Jackson, J.E., 1985, Influence of microporosity upon the evaluation of hydrocarbon saturation: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14296, 12 p.
- Yale, D.P., 1985, Recent advances in rock physics: Geophysics, v. 50(12), p. 2480-2491. See references.

ad . Buris, Ballambarger Tacharcal Services, various's paginaral.

- III. INTERNATIONAL WELL EVALUATION CONFERENCES
 Application and interpretation of various logging tools to regional geology
- Alexander, I., ed., 1982, Schlumberger well evaluation developments--Continental Europe 1982: Paris, Schlumberger Technical Services, 296 p.
- de Murville, E.C. and Dadrian, C., eds., 1973, Schlumberger well evaluation conference--Indonesia 1973: Paris, Schlumberger Technical Services, 83 p.
- Felder, B., ed., 1980, Schlumberger well evaluation conference--Venezuela 1980 [in Spanish]: Paris, Schlumberger Technical Services, variously paginated.
- Logar, J.F., ed., 1983, Schlumberger well evaluation conference--West Africa 1983: Paris, Schlumberger Technical Services, variously paginated.
- Marmissolle-Daguerre, ed., 1984, Schlumberger well evaluation conference--Mexico 1984 [in Spanish]: Paris, Schlumberger Technical Services, variously paginated.
- Mok, J.S., ed., 1985, Schlumberger well evaluation conference--China 1985: Paris, Schlumberger Technical Services, 359 p.
- Pinnington, D.J., ed., 1981, Schlumberger well evaluation conference--United Arab Emirates/Qatar 1981: Paris, Schlumberger Technical Services, 271 p.
- Schlumberger, 1985, Well evaluation conference--Nigeria 1985: Paris, Schlumberger Technical Services, 292 p.
- Schlumberger, 1983, Schlumberger well evaluation conference--India 1983: Paris, Schlumberger Technical Services, 263 p.
- Schlumberger, 1979, Schlumberger well evaluation conference--Algeria 1979:
 Paris, Schlumberger Technical Services, variously paginated.
- Schlumberger, 1976, Schlumberger well evaluation conference--Iran 1976: Paris, Schlumberger Technical Services, 179 p.
- Schlumberger, 1975, Schlumberger well evaluation conference--Arabia 1975: Paris, Schlumberger Technical Services, 152 p.
- Schlumberger, 1974, Schlumberger well evaluation conference--North Sea 1974: Paris, Schlumberger Technical Services
- Schlumberger, 1974, Schlumberger well evaluation conference--Nigeria 1974 (2nd ed.): Paris, Schlumberger Technical Services, variously paginated.
- Smith, C.M., ed., 1984, Well evaluation conference--Egypt 1984: Paris, Schlumberger Technical Services, variously paginated.
- Winchester, A., ed., 1981, Schlumberger well evaluation conference--South East Asia 1981: Paris, Schlumberger Technical Services, 238 p.

IV. CROSSPLOT TECHNIQUES

- Burke, J.A., Schmidt, A.W. and Campbell, R.L., Jr., 1969, The litho-porosity cross plot: The Log Analysts, v. 10(6), November-December, p. 25-43.
- Clavier, C. and Rust, D.H., 1976, MID plot-A new lithology technique: The Log Analyst, v. 17(6), November-December, p. 16-24.
- Fertl, W.H., 1978, Open-hole crossplots--A powerful technique in well log analysis: Dallas, Society of Petroleum Engineers, European offshore petroleum conference preprint SPE-8115. Later published in 1981, Journal of Petroleum Technology, 33(3), p. 535-549. See references.
- Lang, W.H., Jr., 1972, Porosity-resistivity cross-plotting, in 13th annual logging symposium transactions, paper F: Houston, Society of Professional Well Log Analyts, 9 p. Later published in 1973, The Log Analysts, v. 14(1), January-Febraury, p. 16-20.
- Maple, L., 1985, A crossplot approach to electromagnetic propagation tool (EPT) interpretation, in 26th annual logging symposium transactions, paper N: Houston, Society of Professional Well Log Analysts, 18 p.
- Mathews, D.M. and Bassiouni, Z., 1984, Resistivity-spontaneous potential crossplot for enhanced interpretation of well logs: The Log Analyst, v. 25(4), July-August, p. 14-19.
- O'Brian, W.J., Brown, S.L. and Sanyal, S.K., 1982, Crossplot technique for the analysis of the carbon/oxygen log, in California regional meeting, proceedings, SPE-10740: Dallas, Society of Petroleum Engineers, p. 243-266.
- Pickett, G.R., 1973, Pattern recognition as a means of formation evaluation, in 14th annual logging symposium transactions, paper A: Houston, Society of Professional Well Log Analysts, 20 p. Later published in 1973, The Log Analyst, v. 14(4), July-August, p. 3-11.

double formation data while drilling: Journal of Perculsus Technology.

- Anonymous, 1971, Logging oddities--radioactive clean dolomite: Canadian Well Logging Society Journal v. 4(1), p. 95-98.
- Buchanan, J.C., Clearman, D.K., Heidbrink, L.J. and Smith, H.D., Jr., 1984,
 Applications of TMD pulsed neutron logs in unusual downhole environments,
 in 25th annual loggining symposium transactions, paper KKK: Houston,
 Society of Professional Well Log Analysts, 17 p.
- Chilingarian, G.V. and Vorabutr, P., 1981, Drilling and drilling fluids: Amsterdam, Elsevier, Devlopments in petroleum science, 11, 767 p.
- Clavier, C., Heim, A. and Scala, C., 1976, Influence of pyrite on resistivity and other logging measurements, <u>in</u> 17th annual logging symposium transactions, paper HH: Houston, Society of Professional Well Log Analysts, 33 p.
- Coope, D.F. and Hendricks, W.E., 1984, Formation evaluation using measurements recorded while drilling, in 25th annual logging symposium transactions, paper FF: Houston, Society of Professional Well Log Analysts, 21 p. Later published 1985, MWD logs provide fast, accurate formation data, World Oil, v. 20(2), August 1, p. 46-52.
- Cooley, B.B., 1974, The delta tension curve for better log quality, in 15th annual logging symposium transactions, paper F: Houston, Society of Professional Well Log Analysts, 9 p. Later reprinted in 1974, The Log Analyst, v. 15(4), July-August, p. 8-13.
- Cox, J.W. and Raymer, L.L., 1976, The effect of potassium-salt muds on gamma ray, and spontaneous potential measurements, in 17th annual logging symposium transactions, paper I: Houston, Society of Professional Well Log Analysts, , 20 p.
- Crues, J.V., Jr., 1982, Recognizing large SP anomalies in the Cretaceous carbonates along the Balcones systems and how to interpret them: Bulletin of the South Texas Geological Society, v. 23(4), December, p. 16-27.
- Edwards, D.P., Lacour-Gayet, P.J. and Suau, J., 1981, Log evaluation in wells drilled with inverted oil emulsion mud: Dallas, Society of Petroleum Engineers, 56th annual meeting [San Antonio] preprint SPE-10206, 19 p.
- Elliott, L.R., Barolak, J.G., Coope, D.F. and Hendricks, W.E., 1985, Recording downhole formation data while drilling: Journal of Petroleum Technology, v. 37(7), p. 1231-1238. Originally presented in 1983 at SPE Production technology symposium [November 14-15, Lubbock], SPE-12360.
- Fertl, W.H., 1979, Interpretive well logging concepts assist south Texas formation evaluation problems: Transactions of the Gulf Coast Association of Geological Societies, v. 29, p. 64-73.
- Fertl, W.H., 1978, How subsurface temperature affects formation evaluation: Oil and Gas Journal, v. 76(30), July 24, p. 54-62.

- Fertl, W.H., King, E.E. and Kumar., R., 1978, Important SP and gamma ray log anomalies explained: Oil and Gas Journal, v. 76(34), August 21, p. 70-75.
- Fertl, W.H. and Hammack, G.W., 1976, Solid particle penetration into porous reservoir rocks and its effect on well log analysis, in 17th annual logging symposium transactions, paper F: Houston, Society of Professional Well Log Analysts, 10 p.
- Hammack, G.W. and Fertl, W.H., 1974, Anomalies observed on well logs, in 15th annual logging symposium transactions, paper V: Houston, Society of Professional Well Log Analysts, 21 p. Also published in 1974, World Oil, v. 179(7), p. 69-73.
- Jordan, J.R. and Campbell, F.L., 1984, Well logging I--Rock properties, borehole environment, mud and temperature logging: Dallas, Society of Petroleum Engineers, Monograph Series 9, 167 p.
- Kowalski, J.J. and Asekun, S.O., 1979, It may not be shale, <u>in</u> 20th annual logging symposium transactions, paper P: Houston, Society of Professional Well Log Analysts, 15 p.
- McGlothlin, R.E. and Krause, H., 1980, Water base drilling fluids, in Research on environmental fate and effects of drilling fluids and cuttings symposium, proceedings, volume I: U.S. Department of Energy, Report DOE/CONF-800172, p. 30-37. A concise description of the composition and uses of commonly used water-based drilling muds.
- McMordie, W.C. Jr., 1980, Oil base drilling fluids, in Research on environmental fate and effects of drilling fluids and cuttings symposium, proeceedings, volume I: U.S. Department of Energy, Report DOE/CONF-800172, p. 38-42. A concise description of the composition and uses of oil-based drilling muds.:
- Misk, A., Mowat, G.R., Goetz, J.F., Vivet, B., 1977, Effects of hole conditions on log measurement and formation evaluation, in 5th European logging symposium transactions, paper 22: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 16 p. Reprinted in 1978, in Measuring accuracy of parameters used in formation evaluation in the North Sea, Norwegian Petroleum Society conference [10/30-11/2/77]: Oslo, Norwegian Information Publishers, p. 21-37.
- Moore, C.V. and Kaufman, R.L., 1981, Your unsuspected problems——Fluid resistivity and water analysis, <u>in</u> 22nd annual logging symposium transactions, paper C: Houston, Society of Professional Well Log Analysts, 15 p.
- Roy, K.K. and Saha, A., 1975, Discussion on SP log interpretation: Canadian Well Logging Society Journal, v. 8(1), p. 41-46.
- Semmelbeck, M., Holditch, S.A., 1985, The effects of mud filtrate invasion on the interpretation of induction logs <u>in</u> Eastern regional meeting [Morgantown, W. Vir., November 5-8], proceedings, SPE-14491: Dallas, Society of Petroleum Engineers, p. 27-38.

- Sharma, M.M. and Wunderlich, R.W., 1985, the alteration of rock properties due to interactions with drilling fluid components: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14302, 12 p.
- Simpson, J.P., 1985, The drilling mud dilemma, recent examples: Journal of Petroleum Technology, v. 37(2), p. 201-206. Discussion and reply v. 37(7), p. 1230.
- Suau, J. and Spurlin, J., 1982, Interpretation of micaceous sandstones in the North Sea, in 23rd annual logging symposium transactions, paper G: Houston, Society of Professional Well Log Analysts, 32 p.
- Williams, H. and Dunlap, H.E., 1984, Short term variations in drilling fluid parameters; their measurement and implications: The Log Analyst, v. 25(5), September-October, p. 3.

scultoring: Sceton, INRDC Press, 980 p.

process Atlas, 1981, Interpretive methods for production well loss: Houston,

Pertit, W.S., 1982, Well logging and its applications in cased holes, in

VI. CASED HOLE AND PRODUCTION LOGGING (See also VIII. Nuclear logging)

- Aguilera, R., 1977, A new approach for log analysis of the pulsed neutron and resistivity log combination: Dallas, Society of Petroleum Engineers SPE-6995. Later published 1979, Journal of Petroleum Technology, v. 31(4), p. 415-418.
- Ahmed, A.E., 1977, A neutron logging method for locating the top of cement behind borehole casing: Journal of Petroleum Technology, v. 29(9), p. 1089-1090, SPE-6498.
- Arnold, D.M. and Paap, H.J., 1978, Quantitative monitoring of water flow behind and in wellbore casing: Dallas, Society of Petroleum Engineers, SPE-7107. Later published in 1979, Journal of Petroleum Technology, v. 31(1), p. 121-130.
- Bateman, R.M., 1984, Cased-hole log analysis and reservoir performance monitoring: Boston, IHRDC Press, 380 p.
- Connolly, E.T., 1970, Interpretation and recognition of calibration and recording abnormalities on production logs: Canadian Well Logging Society Journal, v. 3(1), December, p. 89-122.
- Connolly, E.T., 1965, Resume and current status of the use of logs in production, in 6th annual logging symposium transactions, paper L:
 Houston, Society of Professional Well Log Analysts, p. Reprinted in 1985, Production logging: Dallas, Society of Petroleum Engineers reprint series 19, p. 268-352.
- Cooke-Yarborough, P., 1984, Reservoir analysis by wireline formation tester; pressures, permeabilities, gradients, and net pay: The Log Analyst, v. 26(6), November-December, p. 36-46.
- Dresser Atlas, 1984, Wireline services catalog: Houston, Dresser Industries, publication 9102, 43 p. A brief discussion with illustrations of the various logging devices and processing services currently available.
- Dresser Atlas, 1983, Neutron Lifetime Log Interpretation: Houston, Dresser Industries, publication 3319, 73 p.
- Dresser Atlas, 1981, Interpretive methods for production well logs: Houston, Dresser Industries, publication 9441, 113 p.
- Elkins, L.F., 1978, Evaluation <u>in</u> Determination of residual oil saturation:
 Oklahoma City, Interstate Oil Compact Commission, chapter 8, p. 177-261.
- Fertl, W.H., 1982, Well logging and its applications in cased holes, in International petroleum conference [Beijing], proceedings, SPE-10034: Dallas, Society of Petroleum Engineers, p. 541-561. Later published in 1984, Journal of Petroleum Technology, v. 36(2), p. 249-266.

- Fertl, W.H. and Wichmann, P.A., 1977, Exploration for and evaluation of hydrocarbon resources in cased boreholes, <u>in</u> Fifth European logging symposium transactions, paper 25: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 17 p.
- Grooms, G.E. and Schulte, R.K., 1985, Contributions of observation well logging to the evaluation of polymer-augmented waterflood pilots: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14396, 12 p.
- Hull, R.L. and Johnson, D.E., 1985, The Muldoon field—an evaluation of behind-casing pay zones in a freshwater environment: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14464, 5 p.
- Jones, R.L., 1982, Bootstrapping your way into TDT analysis: The Log Analyst, v. 23(4), July-August, p. 3-13.
- Lachance, D.P. and Winston, R.T., 1985, Recognition of waterflood sweep and formation lithology in a giant Egyptian oil field by applied petrophysics: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14277, 8 p.
- McKinley, R.M., 1982, Production logging, in International petroleum exhibition and technical symposium [Bejing] proceedings, SPE-10035: Dallas, Society of Petroleum Engineers, p. 563-594. Reprinted in 1985, Production logging: Dallas, Society of Petroleum Engineers, reprint series 19, p. 176-207.
- Murphy, R.P., Foster, G.T., and Owens, W.W., 1976, Evaluation of waterflood residual oil saturations using log-inject-log procedures, in 4th SPE-AIME symposium on improved oil recovery [Tulsa], proceedings: Dallas, Society of Petroleum Engineers. Later published in 1977, Journal of Petroleum Technology, v. 29(2), p. 178-186.
- Murthy, V.R. and Gupta, A.K., 1982, Evaluation of formation porosities in Bombay High field using cased hole compensated neutron log: Bulletin ONGC [India Oil Natural Gas Commission], v. 19(2), December, p. 243-256.
- Pecine, R.J., Welbridge, E.W., Vandegrift, Herzenberg, C.L., Seitz, M.G. and Heemstra, R., 1984, Assessment of gamma-inject logging techniques for the determination of residual oil saturation: U.S. Department of Energy, Bartlesville Center Report DOE/BC/10383-30, 74 p.
- Petovello, B.G., 1975, Evaluation of well performance through production logging: Canadian Well Logging Society Journal, v. 8(1), p. 47-56.

 Reprinted in 1975, in 16th annual logging symposium transactions, paper E: Houston, Society of Professional Well Log Analysts. Reprinted in 1985, in Production Logging: Dallas, Society of Petroleum Engineers, reprint series 19, p. 112-117.
- Richardson, J.E., 1977, Monitoring flood profiles with induction logs: Dallas, Society of Petroleum Engineers, 52nd annual meeting [Denver] preprint SPE-6785. Later published in 1979, Journal of Petroleum Technology, v. 31(1), p. 19-24.

- Robinson, W.S., 1974, Field results from the noise-logging technique: Dallas, Society of Petroleum Engineers, 49th annual meeting [Houston] preprint SPE-5088. Later published in 1976, Journal of Petroleum Technology, v. 28(11), p. 1370-1376. Reprinted in 1985, Production logging: Dallas, Society of Petroleum Engineers, reprint series 19, p. 233-239.
- Schlumberger, 1983, Production services catalog: New York, Schlumberger Ltd., 60 p. A brief discussion with illustrations of the various logging devices and processing services currently available.
- Schlumberger, 1981, RFT--Essentials of pressure test interpretation: New York, Schlumberger Ltd., 77 p.
- Schlumberger, 1975, Cased hole applications: Houston, Schlumberger Well Services, 123 p.
- Schlumberger, 1973, Production log interpretation: New York, Schlumberger Ltd., 91 p.
- Shultz, A.L., Bell, W.T., and Urbanosky, H.J., 1974, Advancements in uncased-hole, wireline formation-tester techniques: Dallas, Society of Petroleum Engineers, 49th annual meeting [Houston] preprint SPE-5035. Later published in 1975, Journal of Petroleum Technology, v. 27(11), p. 1331-1336.
- Smolen, J.J. and Litsey, L.R., 1977, Formation evaluation using wireline formation tester pressure data: Dallas, Society of Petroleum Engineers, 52nd annual meeting [Denver] preprint SPE-6822. Later published in 1979, Journal of Petroleum Technology, v. 31(1), p. 25-32.
- Society of Petroleum Engineers, 1985, Production logging: Dallas, Society of Petroleum Engineers, Reprint Series 19, 375 p. Reprints of 26 significant papers.
- Society of Professional Well Log Analysts, 1979, Pulsed neutron logging reprint volume: Houston, Society of Professional Well Log Analysts, 448 p. Contains 32 significant papers on tool operation and application.
- Tanner, H.L., 1985, Evaluation of low-resistivity cased-off reserves using the shale-compensated chlorine log: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14459, 8 p.
- Thomas, E.C. and Ausburn, B.E., 1976, Determining swept-zone residual oil saturation in a slightly consolidated Gulf Coast sandstone reservoir, in SPE-AIME improved oil recovery symposium, proceedings, SPE-5803: Dallas, Society of Petroleum Engineers. Later published in 1979, Journal of Petroleum Technology, v. 31(4), p. 513-524.
- Tubman, K.M., Cheng, S.T., Willen, D.E., Toksoz, M.N., 1984, Determination of formation properties in cased boreholes using full waveform acoustic logs, in 25th annual logging symposium transactions, paper CC: Houston, Society of Professional Well Log Analysts, 19 p.

- Westaway, P., Whittman, M. and Rochette, P., 1979, Applications of nuclear techniques to reservoir monitoring, in 1979 Middle East oil technical conference [Manama, Bahrain, March 25-29], proceedings, SPE-7776: Dallas, Society of Petroleum Engineers. Later published in 1981, Journal of Petroleum Technology, v. 33(1), p. 46-54.
- Wyman, R.E., 1978, Logging methods <u>in</u> Determination of residual oil saturation: Oklahoma City, Interstate Oil Compact Commission, chapter 5, p. 89-116.
- Wyman, R.E., 1977, How should we measure residual-oil saturation?: Bulletin of Canadian Petroleum Geology, v. 25(2), May, p. 233-270.
- Youngblood, W.E., 1979, The application of pulsed-neutron-decay time logs to monitor waterfloods with changing salinity, <u>in</u> 1979 Middle East oil technical conference [Bahrain], proceedings, SPE-7777: Dallas, Society of Petroleum Engineers.

Houston, Society of Professional Well log Analysts, 14 p. Disucces the

effects of invasion on the soulc log.

gratta, R., 1985, Observation of sheer waves and correlation with P avenue in

discussion of P and S waves, their potential, and application in formation

57th annual meeting [New Orleans] preprint 5FE-11032, 11 p.

VII. ACOUSTIC LOGGING (See also 15. Fracture detection)

- Aron, J. Murray, J. and Seeman, B., 1978, Formation compressional and shear interval transit-time logging by means of long spacings and digital techniques: Dallas, Society of Petroleum Engineers, 53rd annual meeting [Houston] preprint SPE-7446, 11 p.
- Baker, L.J., 1984, The effect of the invaded zone on full wavetrain acoustic logging: Geophysics, v. 49(6), p. 796-809. An important discussion on the depth of investigation of acoustic logging tools.
- Balch, A.H. and Lee, M.W., eds., 1984, Vertical seismic profiling-technique, applications, and case histories: Boston, International Human Resource development Corporation (IHRDC), 488 p.
- Blakeman, E.R., 1982, A case study of the effect of shale alteration on sonic transit times, in 23rd annual logging symposium transactions, paper II: Houston, Society of Professional Well Log Analysts, 14 p. Disucses the effects of invasion on the sonic log.
- Botter, B.J., 1982, Circumferential acoustic waves in boreholes for the delineation of vertical fractures, in 23rd annual logging symposium transactions, paper S: Houston, Society of Professional Well Log Analysts, 21 p.
- Castagna, J.P. and Gaiser, J.E., 1984, Digital processing improves sonic log reliability: World Oil, v. 198(5), April, p. 71-74.
- Chemali, R, Gianzero, S. and Su, S.M., 1984, The depth of investigation of compressional wave logging for the standard and the long spacing sonde, in 9th international formation evaluation symposium transactions, paper 13: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 10 p.
- Engelhard, L., 1985, Shear wave well logging from wavetrain analysis in G.P. Dohr, ed., Seismic shear waves, seismic exploration volume 15A, part A--Theory: London, Geophysical Press, chapter 5, p. 283-351.
- Frost, E., Jr. and Fertl, W.H., 1982, Shear wave travel time determination using an unconventional approach: Dallas, Society of Petroleum Engineers, 57th annual meeting [New Orleans] preprint SPE-11032, 11 p.
- Garotta, R., 1985, Observation of shear waves and correlation with P events in G.P. Dohr, ed., Seismic shear waves, seismic exploration volume 15B, part B-Applications: London, Geophysical Press, chapter 1, p. 1-86. A discussion of P and S waves, their potential, and application in formation evaluation.
- Gevers, E.C.A. and Watson, S.W., 1978, Quantitative interpretation of seimic data using well logs: Dallas, Society of Petroleum Engineers, 53rd annual meeting [Houston] preprint SPE-7439, 4 p.

- Goetz, J.F., Dupal, L., and Bowler, J., 1979, An investigation in to discrepancies between sonic log and seismic check shot velocities:

 Australian Petroleum Exploration Association Journal, V. 19(1), P. 131-141.
- Hardage, B.A., 1985, Vertical seismic profiling—a measurement that transfers geology to Geophysics, in O.R. Berg and D.G. Woolverton, eds., Seismic stratigraphy II—an integrated approach to hydrocarbon exploration:

 Tulsa, American Association of Petroleum Geologists, Memoir 39, P. 13-34.
- Hardage, B.A., 1985, The uses and abuses of vertical seismic profiling: World Oil, v. 201(7), December, p. 53-56.
- Hartley, K.B., 1981, Factors affecting sandstone acoustic compressional velocities and an examination of empirical correlations between velocities and porosities, in 22nd annual logging symposium transactions, paper PP: Houston, Society of Professional Well Log Analysts, 20 p.
- Hoard, R.E., 1983, Sonic waveform logging—A new way to obtain subsurface geologic information, in 24th annual logging symposium transactions, paper XX: Houston, Society of Professional Well Log Analysts, 16 p. Later published in 1985, Oil and Gas Journal, v.; 83(26), July 1, p. 70-74.
- Hornby, B.E. and Chang, S.K., 1985, A case study of shale and sandstone alteration using a digital sonic tool <u>in</u> 26th annual well logging symposium transactions, paper H: Houston, Society of Professional Well Log Analysts, 10 p.
- Husten, P., 1979, Analysis of sonic wave trains, in 6th European formation evaluation symposium transactions, paper D: London, Society of Professional Well Log Analysts, London Chapter, 15 p.
- Koerperich, E.A., 1979, Shear wave velocities determined from long- and short-spaced borehole acoustic devices: Dallas, Society of Petroleum Engineers, 54th annual meeting (Las Vegas) preprint SPE-8237. Later published in 1980, Society of Petroleum Engineers Journal, v. 20(5), p. 317-326.
- Koerperich, E.A., 1977, Investigation of acoustic boundary waves and interference patterns as techniques for detecting fractures: Dallas, Society of Petroleum Engineers, 52nd annual meeting [Denver] preprint SPE-6820. Later published in 1978, Journal of Petroleum Technology, v. 30(8), p. 1199-1207.
- Kowalski, J.J., 1975, Formation strength parameters from well logs, in 16th annual logging symposium transactions, paper N: Houston, Society of Professional Well Log Analysts, 19 p. Reprinted in 1978, Acoustic logging reprint volume, paper Z, 19 p.
- Lang, W.H., 1980, Determination of prior depth of burial using interval transit time: Oil and Gas Journal, v. 78(4), January 28, p. 222-232.

- Levine, E.N., Cybriwsky, Z.A. and Toksoz, M.N., 1984, Detection of permeable rock fractures and estimation of hydraulic conductivity by 3-D vertical seismic profiling, in D.M. Nielsen and M.Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 853-876.
- McCann, D.M. and McCann, C., 1976, The application of borehole acoustic logging techniques in engineering geology, in 4th European formation evaluation symposium transactions, paper N: London, Society of Professional Well Log Analysts, London Chapter, 22 p. Later published in 1977, The Log Analyst, v. 18(3), May-June, p. 30-37.
- Minear, J.W., 1982, Clay models and acoustic velocities: Dallas, Society of Petroleum Engineers, 57th annual meeting (New Orleans) preprint SPE-11031, 11 p.
- Minear, J.W. and Ajam, S.O., 1984, Full wave acoustic logging--some examples, in 5th offshore South East Asia conference [February 21-24, Singapore], proceedings, SPE-12399: Dallas, Society of Petroleum Engineers, 13 p.
- Nations, J.F., 1974, Lithology and porosity from acoustic shear and compressional wave transit time relationships, in 15th annual logging symposium transactions, paper Q: Houston, Society of Professional Well Log Analysts, 16 p. Later published in 1975, The Log Analyst, v. 16(6), November-December, p. 3-8. Reprinted in 1978, Acoustic logging: Houston, Society of Professional Well Log Analysts, Reprint Volume, paper Y, 16 p.
- Newmark, R.L., Anderson, R.N., Moos, D., Zoback, M.D., 1985, Sonic and ultrasonic logging of hole 504B and its implications for the structure, porosity, and stress regime of the upper 1 km of the oceanic crust, in Initial reports of the the Deep Sea Drilling Project, v. 83: Washington D.C., U.S. Government Printing Office, p. 479-510. Also published in 1985, Structure, porosity and stress regime of the upper oceanic crust--Sonic and ultrasonic logging of DSDP hole 504B: Tectonophysics, v. 118, p. 1-42.
- Omnes, G., 1979, Logs from P and S vertical seismic profiles: Dallas, Society of Petroleum Engineers, 54th annual meeting [Las Vegas] preprint SPE-8364. Later published in 1980, Journal Petroleum Technology, v. 32(10), p. 1843-1849.
- Omnes, G., 1978, The vertical seismic profile--A bridge between velocity logs and surface seismograms: Dallas, Society of Petroleum Engineers, 53rd annual meeting [Houston] preprint SPE-7436, 12 p.
- Oristaglio, M.L., 1985, A guide to current use of vertical seismic profiles: Geophysics, v. 50(12), p. 2473-2479.
- Overton, A., 1975, Borehole seismic methods, in A.V. Dyck, ed., Borehole geophysics applied to metallic mineral prospecting—A review: Geological Survey of Canada Paper 75-31, p. 3-12.

- Paillet, F.L., 1985, Applications of borehole-acoustic methods in rock mechanics, in E. Ashworth, ed., Research and engineering applications in rock masses (proceedings of the 26th U.S. symposium on rock mechanics, South Dakota School of Mines and Technology, Rapid City, 26-28 June): Boston, A.A. Balkema, p. 207-220.
- Pennebaker, E.S., 1968, An engineering interpretation of seismic data: Dallas, Society of Petroleum Engineers, 43rd annual meeting [Houston] preprint SPE-2165, 12 p. Also published, in part, 1968, World Oil, v. 166(7), June, p. 73-77. Important uses and interpretations of sonic log data.
- Rambow, F.H.K., 1984, The borehole televiewer--Some field examples, in 25th annual logging symposium transactions, paper C: Houston, Society of Professional Well Log Analysts, 21 p.
- Raymer, L.L., Hunt, E.R. and Gardner, J.S., 1980, An improved sonic transit time-to-porosity transform, in 21st annual logging symposium transactions, paper P: Houston, Society of Professional Well Log Analysts, 12 p.
- Smith, R.F., McCoy, R.L., Ausburn, B.E. and Pottorf, B.R., 1978, Determining acoustic velocity of subsurface formations from well log data: Dallas, Society of Petroleum Engineers, 53rd annual meeting (Houston) preprint SPE-7435. Later published in 1979, Journal of Petroleum Technology, v. 31(11), p. 1453-1461.
- Society of Professional Well Log Analysts, 1978, Acoustic Logging Reprint Volume: Houston, Society of Professional Well Log Analysts, various pagination. Contains 26 significant papers on tool development, operation and application.
- Spencer, T.W. and Wu, R.C., 1985, Polarization method for the determination of Poisson's ratio in boreholes: Geophysics, v. 50(12), p. 2808-2816.
- Stephen, R.A., Cardo-Casa, F. and Cheng, C.H., 1985, Finite-difference synthetic acoustic logs: Geophysics, v. 50(10), p. 1588-1609.
- Stewart, R.R., Huddleston, P.H. and Kan, T.K., 1984, Seismic versus sonic velocities—a vertical seimic profiling study, in A.H. Balch and M.W. Lee, eds., Vertical seismic profiling—technique, applications, and case histories: Boston, International Human Resource development Corporation (IHRDC), p. 385-423.
- Tatham, R.H., 1985, Shear waves and lithology in G.P. Dohr, ed., Seismic shear waves, seismic exploration volume 15B, part B--Applications: London, Geophysical Press, chapter 2, p. 87-133.
- Taylor, T.J., 1983, Interpretation and application of borehole televiewer surveys, in 24th annual logging symposium transactions, paper QQ: Houston, Society of Professional Well Log Analysts, 19 p.
- Thomas, D.H., 1977, Seismic applications of sonic logs, in 5th European logging symposium transactions, paper 7: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 23 p. Later published in 1978, The Log Analyst, v. 19(1), January-February, p. 23-32.

- Tixier, M.P., Loveless, G.W. and Anderson, R.A., 1973, Estimation of formation strength from the Mechanical Properties Log: Dallas, Society of Petrolew Engineers, 48th annual meeting (Las Vegas) preprint SPE-4532, 14 p. Later published in 1975, Journal of Petroleum Technology, v. 27(3), p. 283-293. Reprinted in 1978, Acoustic Logging: Houston, Society of Professional Wellog Analysts, Reprint Volume, paper X, 11p.
- Tosaya, C. and Nur, A., 1982, Effects of diagenesis and clays on compressional velocities in rocks: Geophysical Research Letters, v. 9(1), p.
- White, J.E., 1983, Waves along cyclindrical boreholes, <u>in</u> Underground sound, application of seismic waves: Amsterdam, Elsevier, Methods in geochemistry and geophysics 18, Chapter 5, p. 139-245.
- Willis, M.E. and Toksoz, M.N., 1983, Automatic P and S velocity determination from full waveform digital acoustic logs: Geophysics, v. 48(12), p. 1631-1644.
- Zemanek, J., Caldwell, R.L., Glenn, E.E., Jr., Holcomb, S.W., Norton, L.J. And Straus, A.J.D., 1968, The Borehole Televiewer—A new logging concept for fracture location and other types of borehole inspection: Dallas, Society of Petroleum Engineers, 43rd annual meeting (Houston) preprint SPE-2402. Later published in 1969, Journal of Petroleum Technology, v. 21(6), p. 762-774.

core enalysis, in Waclaur to buigues in geotheristry and jeophysics: Vienna, Sustrik, Instenational Atomic Energy Alexan, p. 43-105.

remar Atlas, 1981, Carbon/Onygra log: Monagon, Present Industries,

VIII. NUCLEAR LOGGING

- Ajam, S.O., 1985, Applications of thermal multigate decay pulsed neutron logs in unusual downhole logging environments: Australian Petroleum Exploration Association [APEA] Journal, v. 25, part 1, p. 265-274.
- Brown, J.A., Jackson, J.A. and Koelle, A.R., 1985, Western gas sands project Los Alamos NMR well logging tool development: Los Alamos, Los Alamos National Laboratory, Report LA-10374-PR, March, 77 p.
- Buchanan, J.C., Clearman, D.K., Heidbrink, L.J. and Smith, H.D., Jr., 1984,
 Applications of TMD pulsed neutron logs in unusual downhole environments,
 in 25th annual logging symposium transactions, paper KKK: Houston,
 Society of Professional Well Log Analysts, 17 p.
- Caldwell, R.L., Desai, K.P. and Mills, W.R., Jr., 1976, Geophysical well-logging using nuclear techniques, <u>in</u> Nuclear techniques in geochemistry and geophysics: Vienna, Austria, International Atomic Energy Agency, p. 3-19.
- Caldwell, R.L., Mills, W.R., Jr., Orr, W.L. and Allen, L.S., 1977, Nuclear techniques in oil and gas exploration and production, in Symposium on nuclear technology in exploration, extraction and processing mineral resources, 1977, proceedings: Vienna, International Atomic Energy Agency, p. 3-41.
- Chace, D.M., Schmidt, M.g., Frost, E. and Fertl, W.H., 1985, Advance in cased hole logging the multiparameter spectroscopy instrument continuous carbon/oxygen log, in 3rd international UNITAR/UNDP heavy crude and tar sands conference preprints [Long Beach, California, July 22-31, 1985]:

 New York, United Nations Institute for Training and Research, Information Center for Heavy Crude and Tars, v. 3, p. 1404-1419.
- Clavier, C., Hoyle, W., Meunier, D., 1969, Quantitative interpretation of thermal neutron decay time logs--part I, fundamentals and techniques: Dallas, Society of Petroleum Engineers, 44th annual meeting [Denver] preprint SPE-2658-II. Later published in 1971, Journal of Petroleum Technology, v. 23(6), p. 743-763.
- Czubek, J.A., 1976, Comparison of nuclear well logging data with the results of core analysis, in Nuclear techniques in geochemistry and geophysics:

 Vienna, Austria, International Atomic Energy Agency, p. 93-106.
- Dresser Atlas, 1983, Neutron Lifetime Log: Houston, Dresser Industries, publication 3319, 100 p. Interpretation and application manual.
- Dresser Atlas, 1981, Carbon/Oxygen log: Houston, Dresser Industries, publication 9417, variously paginated. Reprints of papers on tool operation, interpretation and application.
- Dresser Atlas, 1981, Spectralog: Houston, Dresser Industries, pubication 3334, variously paginated. Reprint volume containing papers on tool applications.

- Grau, J.A., Koscoe, B.A. and Tabanou, J.R., 1985, A borehole correction model for capture gamma-ray spectroscopy logging tools: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14462, 8 p.
- Hartley, K.B., 1979, Evaluation of wireline down-log information and effects of increased log speeds on data quality: Dallas, Society of Petroleum Engineers, 54th annual meeting (Las Vegas) preprint SPE-8363. Later published in 1980, Journal of Petroleum Technology, v. 32(7), p. 1151-1160. Also published in 1981, Oil and Gas Journal, v. 79(8 and 9), February 23, p. 66-76, and March 2, p. 99-100.
- Hilchie, D.W., 1977, Nuclear well logging for petroleum, in J.G. Morse, ed., Nuclear methods in mineral exploration and production: New York, Elsevier, Developments in Economic Geology 7, p. 201-213.
- Horner, S.C. and Sanyal, S.K., 1984, The prediction of saturation using the carbon/oxygen log: U.S. Department of Energy, Report DOE/SF/11564--9, 36 P.
- Jameson, J.B., McGhee, B.F., Blackburn, J.S., and Leach, B.C., 1976,
 Dual-spacing TDT applications in marginal conditions: Dallas, Society of
 Petroleum Engineers, Rocky Mountain meeting [Casper] preprint SPE-5904.
 Later published in 1977, Journal of Petroleum Technology, v. 29(9), p.
 1067-1077.
- Jones, R.L., 1982, Bootstrapping your way into TDT analysis: The Log Analyst, v. 23(4), July-August, p. 3-13.
- Killeen, P.G., 1982, Gamma-ray logging and interpretation, in A.A. Fitch, ed., Developments in geophysical exploration methods 3: London, Applied Science Publishers, p. 95-150.
- McGuire, J.A., Rogers, L.T., and Watson, J.T., 1985, Improved lithology and hydrocarbon saturation determination using the gamma spectrometry log: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14465, 9 p.
- O'Brian, W.J., Sanyal, S.K. and Brown, S.L., 1983, Comprehensive analysis of the carbon/oxygen log: U.S. Department of Energy, Report DOE/ET/12056-28, January 1983, 69 p.
- Roscoe, B.A. and Grau, J.A., 1985, Response of the carbon/oxygen measurement for an inelastic gamma ray spectroscopy tool: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14460, 7 p.
- Russell, M.J. and Ogehenejobo, M.J.O., 1984, Experience with a new petrophysical evaluation tool—the gamma ray spectroscopy tool (GST): 8th annual international SPE Nigeria sectional conference, paper SPE-LS-126, 14 p.

- Serpas, C.J., Wichmann, P.A., Fertl, W.H., DeVries, M.R., and Randall, R.R., 1977, The dual detector Neutron Lifetime Log-theory and practical applications, in 18th annual logging symposium transactions, paper CC: Houston, Society of Professional Well Log Analysts, 37 p.
- Setser, G. and Williams, M.R., 1985, Measurement of remaining oil saturation in northern Michigan using nuclear magnetism log data and pressure core: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14276, 10 p.
- Schlumberger, 1982, Essentials of natural gamma ray spectrometry interpretation: Singapore, Schlumberger Ltd., 69 p.
- Society of Professional Well Log Analysts, 1979, Pulsed neutron logging reprint volume: Houston, Society of Professional Well Log Analysts, 448 p. Contains 32 significant papers on tool operation and application.
- Society of Professional Well Log Analysts, 1978, Gamma ray, neutron and density logging: Houston, Society of Professional Well Log Analysts, variously paginated. Contains 32 significant papers in these areas.
- Westaway, P., Whittman, M. and Rochette, P., 1979, Applications of nuclear techniques to reservoir monitoring, in 1979 Middle East oil technical conference [Manama, Bahrain, March 25-29], proceedings, SPE-7776: Dallas, Society of Petroleum Engineers. Later published in 1981, Journal of Petroleum Technology, v. 33(1), p. 46-54.

competanions in shall bay sands, in 12th annual logging Aymondian

trateactions, paper Er Buckton, Seciety of Projectional Well Log-

IX. SHALY SANDS

- Aaboe, E., 1984, Influence of shaliness upon conductivity in shaly sandstones in the northern North Sea area, in 25th annual logging symposium transactions, paper LL: Houston, Society of Professional Well Log Analysts, 17 p.
- Almon, W.R., 1979, A geologic appreciation of shaly sands, <u>in</u> 20th annual logging symposium transactions, paper WW: Houston, Society of Professional Well Logging Analysts, 14 p. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. 15-I18.
- Bussian, A.E., 1983, A comparison of shaly sand models, <u>in</u> 24th annual logging symposium transactions, paper E: Houston, Society of Professional Well Log Analysts, 16 p.
- Clavier, C., Coates, G., Dumanoir, J., 1977, Theoretical and experimental bases for the dual-water model for interpretation of shaly sands: Dallas, Society of Petroleum Engineers, 52nd annual meeting [Denver] preprint SPE-6859, 16 p. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. V5-V20. Later published in 1984, Society of Petroleum Engineers Journal, v. 24(2), p. 153-169.
- Dennis, C.B. and Lawrence, T.D., 1984, Log evaluation of clastic shaly formations using corrected Rwa-ratio techniques, in 25th annual logging symposium transactions, paper R: Houston, Society of Professional Well Log Analysts, 16 p.
- Donovan, H.L., 1982, Determining water saturation in anisotropic shaly formations: Canadian Well Logging Society Journal, v. 11(1), p. 19-28.
- Fertl, W.H., 1980, Well log analysis concepts in clastic and argillaceous U.S. Gulf Coast sediments: Transactions of the Gulf Coast Association of Geological Societies v. 30, p. 81-89.
- Fertl, W.H., 1972, Status of shaly sand evaluation, <u>in</u> 4th formation evaluation conference transactions, paper I: Calgary, Canadian Well Logging Society, 26 p.
- Fertl, W.H. and Hammack, G.W., 1971, A comparative look a water saturation computations in shaly pay sands, in 12th annual logging symposium transactions, paper R: Houston, Society of Professional Well Log Analysts, 18 p. Reprinted in 1972, The Log Analyst, v. 13(2), March-April, p. 12-20.
- Glanville, C.R., 1984, A method for direct log calculation of excess conductivity applied to shaly sand log interpretation, in 25th annual logging symposium transactions, paper X: Houston, Society of Professional Well Log Analysts, 17 p.

- Heslop, A., 1972, Gamma-ray log response of shaly sandstone: Canadian Well Logging Society Journal, v. 5(1), p. 29-38. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. 1159-1169.
- Holbrook, P.W., 1985, A new method for estimating hydrocarbon saturation in shaley sands for exploration applications, <u>in</u> 26th annual logging symposium transactions, paper GGG: Houston, Society of Professional Well Log Analysts, 27 p.
- Johnson, W., 1978, Effect of shale on log response: Canadian Well Logging Society Journal, v. 10(1), p. 29-57.
- Johnson, W.L. and Linke, W.A., 1977, Some practical applications to improve formation evaluation of sandstones in the Mackenzie Delta, in 6th formation evaluation symposium transactions, paper R: Calgary, Canadian Well Logging Society, 19 p. Reprinted in 1978, in 19th logging symposium transactions, paper C: Houston, Society of Professional Well Log Analysts, 19 p. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. V47-79.
- Kern, J.W., Hoyer, W.A., Spann, M.M., 1976, Low porosity gas sand analysis using cation exchange and dielectric constant data, in 17th annual logging symposium transactions, paper PP: Houston, Society of Professional Well Log Analysts, 17 p. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. 169-185.
- Koerperich, E.A., 1974, Applications of Waxman-Smits and Archie equations for determination of oil saturation in shaly sand reservoirs: Dallas, Society of Petroleum Engineers, 49th annual meeting [] preprint SPE-5038. Later published 1975, Journal of Petroleum Technology, v. 27
- Marett, G., Chevalier, P., Souhaite, P., Suau, J., 1976, Shaly sand evaluation using gamma ray spectrometry applied to the North Sea Jurassic, in 17th annual logging symposium transactions, paper DD: Houston, Society of Professional Well Log Analysts, 20 p. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. IV43-IV63.
- Neasham, J.W., 1977, The morphology of dispersed clay in sandstone reservoir and its effect on sandstone shaliness, pore space and fluid flow properties: Dallas, Society of Petroleum Engineers, 52nd annual meeting [Denver] preprint SPE-6858, 8 p. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. 187-194.
- Patchett, J.G. and Coalson, E.B., 1982, The determination of porosity in sandstone and shaly sandstone, part 2--Effects of complex mineralogy and hydrocarbons, in 23rd annual logging symposium transactions, paper T:
 Houston, Society of Professional Well Log Analysts, 50 p.
- Patchett, J.G., 1975, An investigation of shale conductivity, in 16th annual symposium transactions, paper U: Houston, Society of Professional Well Log Analysts, 41 p. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. 195-Il35.

- Raiga-Clemenceau, J., Fraisse, C., Grosjean, Y., 1984, The dual-porosity model, a newly developed interpretation method for shaly sands, <u>in</u> 25th annual loggging symposium transactions, paper F: Houston, Society of Professional Well Log Analysts, 16 p.
- Ransom, R.C., 1977, Methods based on density and neutron well-logging responses to distinguish characteristics of shaly sandstone reservoir rock: The Log Analyst, v. 18(3), p. 47-62. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. III05-III20.
- Ruhovets, N. and Fertl, W.H., 1981, Digital shaly sand analysis based on Waxman-Smits model and log-derived clay typing, in 7th European formation evaluation symposium transactions, paper 25: Paris, Society of Professional Well Log Analysts, Paris chapter (SAID), 26 p. Reprinted in 1982, The Log Analyst, v. 23(3), May-June, p. 7-23. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. V107-V134.
- Society of Professional Well Log Analysts, 1982, Shaly sand reprint volume:
 Houston, Society of Professional Well Log Analysts, variously paginated.
 Contains 38 significant papers + extensive bibliography. Excellent source for studying the shaly sand problem.
- Swanson, B.F., 1985, Microporosity in reservoir rocks—Its measurement and influence on electrical resistivity, in 26th annual logging symposium transactions, paper F: Houston, Society of Professional Well Log Analysts, 17 p. Later published in 1985, The Log Analyst, v.26(6), November-December, p. 42-52.
- Thomas, E.C. and Steiber, S.J., 1975, The distribution of shale in sandstones and its effect upon porosity, <u>in</u> 16th annual logging symposium transaction, paper T: Houston, Society of Professional Well Log Analysts, 15 p.
- Tixier, M.P., Morris, R.L. and Connell, J.G., 1968, Log evaluation of low resistivity pay sands in the Gulf Coast, in 9th annual logging symposium transactions, paper E (abstract only): Houston, Society of Professional Well Log Analysts. Later published in 1968, The Log Analyst, v. 9(6), p. 3-21. Reprinted in 1971, Well logging: Dallas, Society of Petroleum Engineer, Reprint Series 1, p. 342-367. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. IV125-IV142.
- Vajner, E.A., Kidwell, C.M. and Haley, R.A., 1977, Surprising productivity from low-resistivity sands, in 18th annual logging syumposium transactions, paper EE: Houston, Society of Professional Well Log Analysts, 11 p. Reprinted in 1978, Low resistivity masks high potential of Gulf Coast sands, World Oil, v. 186(2), February 1, p. 49-54.
- Vinegar, H.J. and Waxman, M.H., 1984, Induced polarization of shaly sands: Geophysics, v. 49(8), p. 1267-1287. An investigation of this method for direct in-situ log determination of CEC for use in shaly sand evaluation.

- Vinegar, H.J., Waxman, M.H., Best, M.H. and Reddy, K., 1985, Induced polarization logging-Tool development, borehole departure curves and field test results, in 26th annual logging symposium transactions, paper AAA: Houston, Society of Professional Well Log Analysts, 62 p.
- Visser, R. and van Baaren, J.P., 1985, Optimisation [sic] of the shale correction using well logs, <u>in</u> 26th annual logging symposium transactions, paper C: Houston, Society of Professional Well Log Analysts, 14 p.
- Waxman, M.H. and Thomas, E.C., 1972, Electrical conductivities in shaly sands—I. The relation between hydrocarbon saturation and resistivity index; II. The temperature coefficient of electrical conductivity: Dallas, Society of Petroleum Engineers, 47th annual meeting [San Antonio] preprint SPE-4094. Later published in 1974, Journal of Petroleum Technology, v.26(2), p. 213-225. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. V161-V173.
- Waxman, M.H. and Smits, L.J.M., 1967, Electrical conductivities in oil-bearing shaly sands: Dallas, Society of Petroleum Engineers, 42nd annual meeting [Houston] preprint SPE-1863-A, 16 p. Later published in 1968, Society of Petroleum Engineers Journal, v. 8(2), p. 107-122. Reprinted in 1971, Well Logging: Dallas, Society of Petroleum Engineers, Reprint Series 1, p. 101-116. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. V145-V160.
- Wilkinson, J., 1978, Effect of shale distribution on porosity and water saturation: Canadian Well Logging Society Journal, v. 10(1), p. 61-77.
- Wilson, M.D. and Pittman, E.D., 1977, Authigenic clays in sandstones—recognition and influence on reservoir properties and paleoenvironmental analysis: Journal of Sedimentary Petrology, v. 47(1), p. 3-31. Reprinted in 1982, Shaly sand reprint volume: Houston, Society of Professional Well Log Analysts, p. II37-II65.
- Worthington, P.F, 1985, The evolution of shaly-sand concepts in reservoir evaluation: The Log Analyst, v. 26(1), p. 23-40. A concise discussion of the development of models for evaluation of shaly sands. See references.
- Worthington, P.F. and Collar, F.A., 1982, The relevance of induced polarization to quantitative formation evaluation, <u>in</u> 23rd annual logging symposium transactions, paper U: Houston, Society of Professional Well Log Analysts, 42 p.

Bishurithurs Marthiation, Ship, Replant Manne Well Association, w.

X. PERMEABILITY DETERMINATION FROM LOGS

- Allan, J.R., 1979, Prediction of permeability from logs by multiple regression, in 6th European formation evaluation symposium transactions, paper M:
 London, Society of Professional Well Log Analysts, London Chapter, 13 p.
- Brown, A.A., 1977, Permeability from well logs Shaybah Field, Saudi Arabia, in 18th annual logging symposium transactions, paper Q: Houston, Society of Professional Well Log Analysts, 22 p.
- Brown, R.J.S. and Neuman, C.H., 1982, The nuclear magnetism log-A guide for field use: The Log Analyst, v. 23(5), September-October, p. 4-9.
- Brown, R.J.S. and Neuman, C.H., 1980, Processing and display of nuclear magnetism logging signals--Application to residual oil determination, in 21st annual logging symposium transactions, paper K: Houston, Society of Professional Well Log Analysts, 25 p.
- Burck, L.J.S. and Forsyth, D., 1984, Permeability prediction in shaly sands, in 9th international formation evaluation symposium transactions, paper 19: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 18 p.
- Coates, G.R. and Dumanoir, J.L., 1973, A new approach to improved log-derived permeability, in 14th annual logging symposium transactions, paper R::
 Houston, Society of Professional Well Log Analysts, Later published in 1974, The Log Analyst, v. 15(1), January-February, p. 17-31.
- Ershaghi, I., Dougherty, E.L., Herzberg, D. and Ucok, H., 1981, Permeability determination in liquid dominated geothermal reservoirs using the Dual Induction Laterolog, in I. Ershaghi, E.E. Dougherty, L.L. Handy, eds., Formation evaluation in liquid dominated geothermal reservoirs: U.S. Department of Energy, Report DOE/ET/28384-T1, p. 41-59.
- Herrick, R.C., Couturie, S.H., and Best, D.L., 1979, An improved nuclear magnetism logging system and its application to formation evaluation: Dallas, Society of Petroleum Engineers, 54th annual meeting [Las Vegas] preprint SPE-8361, 7 p.
- Kapadia, S.P. and Menzie, D.E., 1985, Determination fo permeability variation factor V from log analysis: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14402, 10 p.
- Kwader, T., 1984, Estimating acquifer permeability from formation resistivity factors, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. p.713-721.
- Loren, J.D., 1972, Permeability estimates from NML measurements: Dallas, Society of Petroleum Engineers, 47th annual meeting reprint SPE-3334. Later published in 1972, Journal of Petroleum Technology, v. 24(8), p. 923-928.

- Neuman, C.H. and Brown, R.J.S., 1981, Applications of nuclear magnetism logging to formation evaluation: Dallas, Society of Petroleum Engineers, 56th annual meeting (San Antonio) preprint SPE-10108, 10 p. Later published in 1982, Journal of Petroleum Technology, v. 34(12), p. 2853-2862.
- Ogbe, D. and Bassiouni, Z., 1978, Estimation of acquifer permeabilities from electric well logs: The Log Analyst, v. 19(5), September-October, p. 21-27.
- Pape, H., Riepe, L and Schopper, J.R., 1984, Calculating permeability from electrical logging data, in 9th international formation evaluation symposium transactions, paper 22: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 11 p.
- Timur, A., 1968, Effective porosity and permeability of sandstones investigated through nuclear magnetic principles, in 9th annual logging symposium transactions, paper K: Houston, Society of Professional Well Log Analysts, 18 p. Later published in 1969, The Log Analyst, v. 10(1), January-February, p. 3-11.
- Timur, A., 1968, An investigation of permeability, porosity, and residual water saturation relationships for sandstone reservoirs in 9th annual well logging symposium transactions, paper J: Houston, Society of Professional Well Log Analysts, 18 p. Later published in 1968, The Log Analyst, v. 9(4), July-August, p. 8-17.
- Timur, A., 1967, Pulsed nuclear magnetic resonance studies of porosity, movable fluid and permeability of sandstones: Dallas, Society of Petroleum Engineers, 42nd annual meeting [] preprint SPE-2045. Later published in 1969, Journal of Petroleum Technology, v. 21(6), p. 775-786.

topingy of Ereleasions; Well top Apelyons, 1976, Appendic logging; Robston,

oriety of Professional Well Log Analysts, 1978, Oceans ray, agetroe and dometry

XI. REPRINT VOLUMES

- American Association of Petroleum Geologists, 1974, Abnormal formation pressures: Tulsa, American Association of Petroleum Geologists, Reprint Series 11, 205 p. Contains 14 significant papers that appeared in the AAPG Bulletin.
- Dresser Atlas, 1981, Spectralog: Houston, Dresser Industries, publication 3334, variously paginated. Contains 8 significant papers on tool development and applications.
- Dresser Atlas, 1981, Carbon/oxygen Log: Houston, Dresser Industries, publication 9417 variously paginated. Contains an interpretation manual and reprints of 10 significant papers on intrumentation and application.
- Society of Petroleum Engineers, 1985, Production logging: Dallas, Society of Petroleum Engineers, Reprint Series 19, 375 p. Contains 26 significant papers on tool design and application.
- Society of Petroleum Engineers, 1971, Well logging: Dallas, Society of Petroleum Engineers, Reprint Series No. 1, 410 p. Contains 26 significant papers on tool development, application and interpretation.
- Society of Professional Well Log Analysts, 1982, Shaly sand: Houston, Society of Professional Well Log Analysts, reprint volume, variously paginated. Contains 41 significant papers and an extensive bibliography on the subject.
- Society of Professional Well Log Analysts, 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, reprint volume, variously paginated. Contains reprints of 17 singificant papers and an extensive bibliography.
- Society of Professional Well Log Analysts, 1979, Pulsed neutron logging: Houston, Society of Professional Well Log Analysts, 448 p. Contains 32 significant papers on tool design, application and interpretation.
- Society of Professional Well Log Analysts, Houston chapter, 1979, The art of ancient log analysis: Houston, Society of Professional Well Log Analysts, variously paginated. Contains reprints of 22 signficant papers in early electric logging.
- Society of Professional Well Log Analysts, 1978, Acoustic logging: Houston, Society of Professional Well Log Analysts, variously paginated. Contains 26 signficant papers on tool design, application and interpretation.
- Society of Professional Well Log Analysts, 1978, Gamma ray, neutron and density logging: Houston, Society of Professional Well Log Analysts, Houston, variously paginated. Contains 30 significant papers on tool design, application and interpretation.

XII. BIBLIOGRAPHIES

- Connolly, E.T., 1973, Comprehensive bibliography of well logging literature 1942-1972: Canadian Well Logging Society Journal, v. 6(1), p. 51-87.
- Dyck, A.V., ed., 1975, Borehole geophysics applied to metallic mineral prospecting--A review: Geological Survey of Canada, Paper 75-31, 67 p. Eight separate review papers each with a bibliography.
- Hilchie, D.W., 1979, Cumulative index, 1960-1978--The Log Analyst, SPWLA symposium papers, SPWLA European symposium papers, CWLS symposium papers, and CWLS Journal: The Log Analyst, v. 20(1), January-February, p. 6-39.
- IRT Corporation, 1976, Future research in borehole assaying technology Volume 2--Bibliography of borehole assaying techniques, 1965-75: U.S. Bureau of Mines, Open-File Report 119(2)-76 (Contract J0255018, Final Report, March 18, 1976), 325 p.
- Laramie Energy Research Center, 1981, A bibliography of publications dealing with tar sands: U.S. Department of Commerce, National Technical Information Service, Report DOE/LETC/RI-81-2 (DE81-026146), 294 p.
- Nuhfer, E.B. and Nurmi, R.D., 1976, Bibliography of references for recognition of depositional environment from wireline log data: West Virginia Geological and Economic Survey, Mineral Briefs Series, 15 p.
- Robbins, S.L., 1980, Bibliography with abridged abstracts of subsurface gravimetry (especially borehole) and corresponding in-situ rock density determinations: U.S. Geological Survey, Open-File Report 80-710, 47 p.
- Scott, J.H., 1974, Well-logging techniques for mineral deposit evaluation--A review: U.S. Bureau of Mines, Information Circular 8627, 45 p.
- Taylor, T.A. and Dey, J.A., 1985, Bibliography of borehole geophysics as applied to ground-water hydrology: U.S. Geological Survey Circular 926, 62 p.
- University of Tulsa, 1985, Index to well logging literature: Tulsa, University of Tulsa, 399 p.

XIII. WELL-LOG RESPONSE CHARTS

- Klein, G. deV., 1984, Vertical sequences and log shapes of major sandstone reservoir systems: Boston, IHRDC Press, 1 sheet.
- Pennwell Publishers, 1983, Well log response chart: Houston, PennWell Publishers.
- Petrocraft Products, 1979, Logging device response chart: Calgary, Petrocraft Products, 1 sheet. Also available through Petrocraft Products Inc., Denver. Illustrates the response of different logging devices to varying lithologies of different geologic ages and contains a summary of how each tool responds to different lithologic parameters.

Crausserious, paper T: Bouston, Society of Professional Wall Log Analyses

Relow, E.L., 1985, Making more investigant use of Low Marived dip

Analyst, v. 26(3), May-June, p. 18-31.

information, Part II -wallsite date sathering tensitional The Log

2. GENERAL GEOLOGICAL APPLICATIONS

- Alexander, I., ed., 1982, Schlumberger well evaluation developments--Continental Europe 1982: Paris, Schlumberger Technical Services, 296 p.
- Alger, R.P., 1980, Geological use of wireline logs, <u>in</u> G.D. Hobson, ed., Developments in petroleum geology 2: London, Applied Science Publishers Ltd., p. 207-272.
- Anderson, R.N., O'Malley, H. and Newmark, R.L., 1985, Use of geophysical logs for quantitative determination of fracturing, alteration and lithostratigraphy in the upper oceanic crust, Deep Sea Drilling Project, holes 504B and 556, in Initial reports of the the Deep Sea Drilling Project, v. 83: Washington D.C., U.S. Government Printing Office, p. 443-478. Also published as 1985, Nuclear, multichannel-sonic, ultrasonic analyses for determination of degree of fracturing and alteration in a fast formation—the deep oceanic crust, in 25th annual logging symposium transactions, paper Y: Houston, Society of Professional Well Log Analysts, 22 p.
- Anderson, R.N., Zoback, M.D., Hickman, S.H. and Newmark, R.L., 1985,
 Permeability versus depth in the upper oceanic crust—in situ measurements
 in Deep Sea Drilling Project hole 504B, eastern equatorial Pacific, in
 Initial reports of the the Deep Sea Drilling Project, v. 83: Washington
 D.C., U.S. Government Printing Office, p. 429-442.
- Beck, A.E., 1976, The use of thermal resistivity logs in stratigraphic correlation: Geophysics v. 41(2), p. 300-309. Reprinted in 1977, The Log Analyst, v. 17(1), January-February, p. 17-22.
- Berilgen, B.A., Sinha, A.K. and Fertl, W.H., 1985, Estimation of productivity of Lobo 6 sand (Lower Wilcox, Texas) by identifying diagenetic clays using well log data: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14278, 15 p.
- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part I--Suggested guidelines: The Log Analyst, v. 26(1), January-February, p. 41-51.
- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part II--Wellsite data gathering considerations: The Log Analyst, v. 26(2), March-April, p. 25-41.
- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part III--Computer processing considerations: The Log Analyst, v. 26(3), May-June, p. 18-31.
- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part IV--Structural interpretation: The Log Analyst, v.26(4), July-August, p. 21-43.

- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part V--Stratigraphic interpretation: The Log Analyst, v. 26(5), September-October, p. 25-64.
- Bigelow, E.L., 1982, Application of dip-related measurements to a complex-carbonate-clastic depositional environment: The Log Analyst, v. 23(2), p. 9-30.
- Boutemy, Y., Calvier, C. and Simond, R.F., 1979, Field studies--A progress report on the contribution of logging: Dallas, Society of Petroleum Engineers, SPE-8178, 13 p.
- Busch, J.M., Fortney, W.G. and Berry, L.N., 1985, Determination of lithology from well logs by statistical analysis: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14301, 11 p.
- Canadian Well Logging Society (CWLS), , Journal
 Well Logging Symposium Transactions biannual:
- Cant, D.J., 1983, Subsurface sedimentology: Geoscience Canada, v. 10(3), p. 115-121.
- Chapman, D.S., Keho, T.H., Bauer, M.S. and Picard, M.D., 1984, Heat flow in the Unita Basin determined from bottom hole temperature (BHT) data: Geophysics, v. 49(4), p. 453-466.
- Cox, J.W., 1970, The high resolution dipmeter reveals dip-related borehole and formation characteristics in 11th annual logging symposium transactions, paper D: Houston, Society of Professional Well Log Analysts, 26 p.
- Crosby, J.W., III, Konstantinidis, B. and Davis, P., 1981, Geotechnical applications of borehole physics: Journal of the Geotechnical Engineering Division, American Society of Civil Engineers, v. 107(GT10), p. 1255-1267.
- de Murville, E.C. and Dadrian, C., eds., 1973, Schlumberger well evaluation conference--Indonesia 1973: Paris, Schlumberger Technical Services, 83 p.
- Dobecki, T.L. and Romig, P.R., 1985, Geothechnical and groundwater geophysics: Geophysics, v. 50(12), p. 2621-2636.
- Dowdle, W.L. and Cobb, W.M., 1974, Static formation temperature from well logs—an empirical method: Dallas, Society of Petroleum Engineers, 49th annual meeting [Houston] preprint SPE-5036. Later published in 1975, Journal of Petroleum Technology, v. 27(11), p. 1326-1330. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. V-61-V-65.
- Dyck, J.H., 1973, Some applications of borehole logging to Quaternary research—A study in southern Saskatchewan: Geoexploration, v. 11(4), p. 233-247.
- Felder, B., ed., 1980, Schlumberger well evaluation conference--Venezuela 1980 [in Spanish]: Paris, Schlumberger Technical Services, variously paginated.

- Fertl, W.H., 1977, Shale density studies and their application, <u>in</u> G.D. Hobson, ed., Developments in petroleum geology 1: London, Applied Science Publishers, p. 293-327.
- Fons, L., 1969, Geological applications of well logs, <u>in</u> 10th annual logging symposium transactions, paper AA: Houston, Society of Professional Well Log Analysts, 44 p.
- Ganer, B.L., 1985, Case history of Cotton Valley sand log interpretation for a north Louisiana field: Journal of Petroleum Technology, v. 37(11), SPE-12182, p. 1995-2205.
- Gardner, G.H.F., Gardner, L.W. and Gregory, A.R., 1974, Formation velocity and density-the diagnostic basics for stratigraphic traps: Geophysics, v. 39(6), December, p. 770-780.
- Goldberg, D., Moos, D. amd Anderson, R.N., 1985, Attenuation changes due to diagenesis in marine sediments in 26th annual well logging symposium transactions, paper KK: Houston, Society of Professional Well Log Analysts, 18 p.
- Greenhouse, J.P. and Pehme, P., 1985, Stratigraphy and physical properties of unconsolidated glacial deposits useing borehole geophysics, in P. Kileen, ed., Borehole geophysics for mining and geotechnical applications [International symposium and workshop, Ottawa, August 29-31, 1983, proceedings]: Geological Survey of Canada, Paper 85-27. Available in early 1986
- Hawkins, J.M., Snyder, R.W. and Pahwa, S.B., 1977, How well logs were used to improve evaluation of a gas storage project: Dallas, Society of Petroleum Engineers, 52nd annual meeting [Denver] preprint SPE-6429. Later published in 1977, Journal of Petroleum Technology, v. 29(12), p. 1550-1558.
- Helgoy, R., 1984, Prediction techniques from logging tools—are the results confirmed by testing?: Norwegian Petroleum Scoiety offshore North Seas conference [August 21-24, Stavanger] paper G4, 25 p.
- Hietala, R.W. and Connolly, E.T., 1984, Integrated rock-log calibration in the Elmworth Field, Alberta Canada--Part II, Well log analysis methods and techniques, in J.A. Masters, eds., Elmworth--case study of a Deep Basin gas field: Tulsa, AAPG Memoir 38, p. 215-242.
- Hietala, R.W., Connolly, E.T., King, H.R. and Sneider, R.M., 1984, Integrated rock-log calibration in the Elmworth Field, Alberta Canada--Part III, Selected samples illustrating integration of rock-log data to determine reservoir petrophysical characteristics, in J.A. Masters, eds., Elmworth--case study of a Deep Basin gas field: Tulsa, AAPG Memoir 38, p. 243-282.
- Holt, O.R., 1983, Relating diplogs to practical geology: Houston, Dresser Industries, publication 1603, 69 p.
- Interstate Oil Compact Commission, 1978, Determination of residual oil saturation: Oklahoma City, Interstate Oil Compact Commission, 302 p.

- Koepnick, R.B., 1985, Distribution and permeability of styolite-bearing horizons within a Lower Cretaceous carbonate reservoir in the Middle East: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14173, 7 p.
- Kowalski, J.J., 1975, Formation strength parameters from well logs, <u>in</u> 16th annual logging symposium transactions, paper N: Houston, Society of Professional Well Log Analysts, 19 p. Reprinted in 1978, Acoustic logging: Houston, Society of Professional Well Log Analysts, Reprint Volume, paper Z, 19 p.
- Lang, W.H., 1980, Determination of prior depth of burial using interval transit time: Oil and Gas Journal, v. 78(4), January 28, p. 222-232.
- Logar, J.F., ed., 1983, Schlumberger well evaluation conference--West Africa 1983: Paris, Schlumberger Technical Services, variously paginated.
- MacCary, L.M., 1984, Relation of formation factor to depth of burial in aquifers along the Texas Gulf Coast, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 722-742.
- MacCary, L.M., 1978, Interpretation of well logs in carbonate aquifers: U.S. Geological Survey Water Resources Investigations 78-88, 30 p. Later published in 1983 as Geophysical logging in carbonate aquifers: Ground Water, v. 21(3), p. 334-342.
- Magara, K., 1979, Formation water salinity and its exploration application, in 7th formation evaluation symposium transactions, paper S: Calgary, Canadian Well Logging Society, 8 p.
- Magara, K., 1976, Thickness of removed sedimentary rocks, paleopore pressure, and paleotemperature, southwestern part of western Canada basin: AAPG Bulletin, v. 60(4), p. 554-565. Valuable uses of sonic log data.
- Mann, C.J., 1979, Obstacles to quantitative lithostratigraphic correlation, in D. Gill and D.F. Merriam, eds., Geomathematical and petrophysical studies in sedimentology: New York, Pergamon Press, p. 149-165.
- Marmissolle-Daguerre, ed., 1984, Schlumberger well evaluation conference--Mexico 1984[in Spanish]: Paris, Schlumberger Technical Services, variously paginated.
- Maxant, J., 1980, Variation of density with rock type, depth, and formation in Western Canada basin from density logs: Geophysics, v. 45(6), p. 1061-1076.
- Maxant, J, 1975, Distribution and regional variation of density in the western Canada basin: Geophysics, v. 40(1), p. 56-78.
- May, J.A. and Eyles, D.R., 1985, Well log and seismic character of Tertiary Terumbu carbonate, South China Sea, Indonesia: AAPG Bulletin, v. 69(9), p. 1339-1358.

- McCann, D.M. and McCann, C., 1976, The application of borehole acoustic logging techniques in engineering geology, <u>in</u> 4th european formation evaluation symposium transactions, paper N: London, Society of Professional Well Log Analysts, London Chapter, 22 p. Later published in 1977, The Log Analyst, v. 18(3), May-June, p. 30-37.
- McConnell, C.L., 1985, Time dependence of the quivalent water resistivity in fresh water wells: The Log Analyst, v. 26(3), May-June, p. 12-17.
- McConnell, C.L., 1985, Salinity and temperature anomalies over structural oil fields, Carter County, Oklahoma: AAPG Bulletin, v. 69(5), p. 781-787.
- McConnell, C.L., 1983, Spontaneous Potential corrections for ground-water salinity calculations; Carter County, Oklahoma, U.S.A.: Journal of Hydrology, v. 65, p. 363-372.
- McGinley, T.R. and McKnight, T.N., Jr., 1984, Log-derived stratigraphic reservoir description: Dallas, Society of Petroleum Engineers, Transactions of the 1984 Permian Basin oil and gas recovery conference [Midland, March 8-9], SPE-12597, p. 179-188.
- Mok, J.S., ed., 1985, Schlumberger well evaluation conference--China 1985: Paris, Schlumberger Technical Services, 359 p.
- Newmark, R.L., Anderson, R.N., Moos, D., Zoback, M.D., 1985, Sonic and ultrasonic logging of hole 504B and its implications for the structure, porosity, and stress regime of the upper 1 km of the oceanic crust: in Initial reports of the the Deep Sea Drilling Project, v. 83: Washington D.C., U.S. Government Printing Office, p. 479-510. Also published 1985, Structure, porosity and stress regime of the upper oceanic crust: sonic and ultrasonic logging of DSDP hole 504B, Tectonophysics, v. 118, p. 1-42.
- Nyberg, O., Lindberg, P.A., Lien, K. and Smistad, 1978, Mineral composition, an aid in classical log analysis used in Jurassic sandstones of the northern North Sea, in 19th annual logging symposium transactions, paper M:
 Houston, Society of Professional Well Log Analysts, 35 p.
- Overton, H.L., 1978, Appraisal of water movement from subsurface data: The Log Analyst, v. 19(5), September-October, p. 3-20.
- Pennebaker, E.S., 1968, An engineering interpretation of seismic data: Dallas, Society of Petroleum Engineers, 43rd annual meeting [Houston] preprint SPE-2165, 12 p. Also published, in part, 1968, World Oil, v. 166(7), June, p. 73-77. Important uses and interpretations of sonic log data.
- Pinnington, D.J., ed., 1981, Schlumberger well evaluation conference--United Arab Emirates/Qatar 1981: Paris, Schlumberger Technical Services, 271 p.
- Pirson, S.J., 1983, Geologic well log analysis, 3rd ed.: Houston, Gulf Publishing Company, 475 p.
- Raymer, L.L. and Burgess, K.A., 1980, The role of well logs in reservoir modeling: Dallas, Society of Petroleum Engineers, 55th annual meeting [Dallas] preprint SPE-9342.

- Reyment, R., 1982, Correlating between electrical borehole logs in paleocology, in J.M. Cubitt and R.A. Reyment, eds., Quantitative stratigraphic correlation: New York, John Wiley, p. 233-240.
- Roux, B., Sanyal, S.K. and Brown, S.L., 1980, An improved approach to estimating true reservoir temperature from transient temperature data, in 50th California regional meeting, proceedings, SPE-8888: Dallas, Society of Petroleum Engineers, p.?. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. V-53-V-60.
- Rudman, A.J. Whaley, J.F., Blakely, R.G. and Biggs, M.E., 1975, Transformation of resistivity to pseudovelocity logs: AAPG Bulletin, v. 59(7), p. 1151-1165.
- Salisbury, M.H., Scott, G.H., Becker, K., Bosum, W., Broglia, C., Carlson, R., Fisher, A., Gieskes, J., Holmes, M., Hoskins, H., Legrand, J., Moos, D., Rio, D, Stephen R., Wilkens, R., 1985, Ocean drilling program—looking down an old hole: Nature, v, 316(6030), August 22, p. 682.
- Sallee, J.E. and Wood, B.R., 1982, Use of microresistivity from the dipmeter to improve formation evaluation in thin sands, northeast Kalimantan, Indonesia, in Offshore South East Asia conference, proceedings: Dallas, Society of Petroleum Engineers SPE-10462, 24 p. Later published in 1984, Journal of Petroleum Technology, v. 36(9), p. 1535-1544.
- Schlumberger, 1985, Well evaluation conference--Nigeria 1985: Paris, Schlumberger Technical Services, 292 p.
- Schlumberger, 1983, Schlumberger well evaluation conference--India 1983: Paris, Schlumberger Technical Services, 263 p.
- Schlumberger, 1979, Schlumberger well evaluation conference--Algeria 1979: Paris, Schlumberger Technical Services, variously paginated.
- Schlumberger, 1976, Schlumberger well evaluation conference--Iran 1976: Paris, Schlumberger Technical Services, 179 p.
- Schlumberger, 1975, Schlumberger well evaluation conference--Arabia 1975: Paris, Schlumberger Technical Services, 152 p.
- Schlumberger, 1974, Schlumberger well evaluation conference--Nigeria 1974 (2nd ed.): Paris, Schlumberger Technical Services, variously paginated.
- Schlumberger, 1974, Schlumberger well evaluation conference--North Sea 1974:
 Paris, Schlumberger Technical Services
- Schulze, R.P., Ives, G.L. and Smalley, E.A., 1985, Evaluation of low-resistivity Simpson series of formations: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14282, 8 p.

- Senger, J.A., 1985, Defining glacial stratigraphy with the neutron log, in 1985 NWWA conference on surface and borehole geophysical methods in ground water investigations [Fort Worth, Texas, February 12-14], proceedings: Worthington, Ohio, National Water Well Association, p. 355-368.
- Serra, 0., 1985, Fundamentals of well-log interpretation volume

 2--interpretation of various well logs [Diagraphies differees Bases de
 l'interpretation]: Pau, France, Bulletin des Centres de Recherches
 Exploration-Production Elf-Aquataine Memoire 7, 632 p. In French, not yet
 translated into English. The best single reference on application of well
 logs to determination of facies and depositional environments,
 sedimentology, (sedimentary structures, diagenesis and compaction),
 structural geology, and fractures.
- Sethi, D.K., 1981, Well log applications in rock mechanics, in 1981 SPE/DOE symposium on low permeability gas reservoirs, proceedings: Dallas, Society of Petroleum Engineers, SPE/DOE-9833, p. 45-53.
- Smith, C.M., ed., 1984, Well evaluation conference--Egypt 1984: Paris, Schlumberger Technical Services, variously paginated.
- Smith, R.F., McCoy, R.L., Ausburn, B.E. and Pottorf, B.R., 1978, Determining acoustic velocity of subsurface formations from well log data: Dallas, Society of Petroleum Engineers, 53rd annual meeting (Houston) preprint SPE-7435. Later published in 1979, Journal of Petroleum Technology, v. 31(11), p. 1453-1461.
- Sneider, R,M. and King. H.R., 1984, Integrated rock-log calibration in the Elmworth Field, Alberta Canada--Part I, reservoir rock detection and characterization: in J.A. Masters, eds., Elmworth--case study of a Deep Basin gas field: Tulsa, AAPG Memoir 38, p. 205-214.
- Society of Professional Well Log Analysts (SPWLA), , The Log Analyst bimonthly journal
 Annual Logging Symposium Transactions
 European Formation Evaluation Symposium Transactions
 Reprint volumes: Houston, Society of Professional Well Log Analysts
- Speece, M.A., Bowen, T.D., Folcik, J.L. and Pollack, H.N., 1985, Analysis of temperatures in sedimentary basins—The Michigan Basin: Geophysics, v. 50(8), p. 1318-1334.
- Spencer, T.W. and Wu, R.C., 1985, Polarization method for determination of Poisson's ratio in boreholes: Geophysics, v. 50(12), p. 2808-2816.
- Staub, W.P. and Treat, N.L., 1981, Analysis of bottom-hole temperature data from oil and gas wells of the Tennessee Valley region: Geothermal Resources Council, Transactions, v. 5, p. 129-132.
- Stosur, J.J. and David, A., 1975, Petrophysical evaluation of the diatomite formation of the Lost Hills field, California: Dallas, Society of Petroleum Engineers, 50th annual meeting [Dallas] preprint SPE-5501. Later published in 1976, Journal of Petroleum Technology, v. 28(10), p. 1138-1144.

- Thomas, D.H., 1977, Seismic applications of sonic logs, in 5th European logging symposium transactions, paper 7: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 23 p. Later published in 1978, The Log Analyst, v. 19(1), January-February, p. 23-32.
- Tixier, M.P., Loveless, G.W. and Anderson, R.A., 1973, Estimation of formation strength from the Mechanical Properties Log: Dallas, Society of Petroleum Engineers, 48th annual meeting (Las Vegas) preprint SPE-4532, 14 p. Later published in 1975, Journal of Petroleum Technology, v. 27(12), p. 283-293. Reprinted in 1978, Acoustic Logging: Houston, Society of Professional Wellog Analysts, Reprint Volume, paper X, 11p.
- Urban, T.C. and Diment, W.H., 1985, Convection in boreholes--Limits on interpretation of temperature logs and methods for determining anomalous fluid-flow, in 1985 NWWA conference on surface and borehole geophysical methods in ground water investigations [Fort Worth, Texas, February 12-14], proceedings: Worthington, Ohio, National Water Well Association, p. 399-414.
- Winchester, A., ed., 1981, Schlumberger well evaluation conference--South East Asia 1981: Paris, Schlumberger Technical Services, 238 p.

ilreach, J.A. and Maricelli, J.J., 1984, Detailed atratigraphic concret.

3. DETERMINATION OF FACIES AND DEPOSITIONAL ENVIRONMENTS

- Almon, W.R. and Schultz, A.L., 1979, Electric log detection od diagenetically altered reservoirs and diagenetic traps: Transactions of the Gulf Coast Association of Geological Societies, v. 29, p. 1-10.
- Asquith, G.B., 1979, Subsurface carbonate depositional models--A concise review: Tulsa, Petroleum Publishing Co., Chapter 4, p. 103-116.
- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part V--Stratigraphic interpretation: The Log Analyst, v. 26(5), September-October, p. 25-64.
- Bigelow, E.L., 1982, Application of dip-related measurements to a complex-carbonate-clastic depositional environment: The Log Analyst, v. 23(2), p. 9-30.
- Chauvel, Y., Seeburger, D.A. and Castro-Orjuela, A., 1984, Applications of the SHDT (Stratigraphic High Resolution Dipmeter) to the study of depositional environments, in 25th annual logging symposium transactions, paper G:
 Houston, Society of Professional Well Log Analysts, 23 p.
- Flach, P.D. and Mossop, G.D., 1985, Depositional environments of Lower Cretaceous McMurray Formation, Athabasca oil sands, Alberta: AAPG Bulletin, v. 69(8), p. 11195-1207.
- Galloway, W.E. and Hobday, D.K., 1983, Terrigenous clastic depositional systems: New York, Springer-Verlag, 423 p.
- Gilreath, J.A., 1977, Dipmeter, in L.W. LeRoy, D.O. LeRoy and J.W. Raese, eds., Subsurface geology, 4th ed.: Golden, CO., Colorado School of Mines, part 3, chapter 22, p. 389.
- Gilreath J.A., Healy, J.S. and Yelverton, J.N., 1969, Depositional environments defined by dipmeter interpretation: Transactions of the Gulf Coast Association of Geological Societies, v. 19, p. 101-111.
- Gilreath, J.A. and Stephens, R.W., 1971, Distributary front deposits: Transactions of the Gulf Coast Association of Geological Societies, v. 21, p. 233-243.
- Gilreath, J.A. and Maricelli, J.J., 1964, Detailed stratigraphic control through dip computations: AAPG Bulletin, v. 48(12), p. 1902-1910.
- Goetz, J.F., Prins, W.J. and Logar, J.F., 1977, Reservoir delineation by wireline techniques: The Log Analyst, v. 18(5), September-October, p. 12-40.
- Lalouel, P., 1979, Log interpretation in deltaic sequences, in 8th annual convention, proceedings: Indonesian Petroleum Association, p. 247-290.

- Lawrence, T.D., Ball, S., Harris, M., 1984, Continuous carbon/oxygen and neutron lifetime log proposed interpretation for organic and/or shaly depositional environments, in 25th annual logging symposium transactions, paper QQ: Houston, Society of Professional Well Log Analysts, 19 p.
- McCabe, P.J., 1984, Depositional environments of coal and coal-bearing strata in R.A. Rahmani and R.M. Flores, eds., Sedimentology of coal and coal-bearing sequences: Oxford, England, Blackwell Publishers, Special Publication 7 of the International Association of Sedimentologists, p. 13-42.
- McGovney, J.E. and Radovich, B.J., 1985, Seismic stratigraphy and facies of the Frigg fan complex, in O.R. Berg and D.G. Woolverton, eds., Seismic stratigraphy II--an integrated approach to hydrocarbon exploration: Tulsa, American Association of Petroleum Geologists, Memoir 39, p. 139-154.
- Nurmi, R.D., 1985, Eolian sandstone reservoirs-bedding facies and production geology modeling: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14172, 8 p.
- Nurmi, R.D., 1984, Geological evaluation of high resolution dipmeter data, <u>in</u> 25th annual logging symposium transactions, paper YY: Houston, Society of Professional Well Log Analysts, 23 p.
- Payre, X. and Serra O., 1979, Turbidites recognized through dipmeter, <u>in</u> 6th European logging symposium transactions, paper K: London, Society of Professional Well Log Analysts, London Chapter, 26 p.
- Priisholm, S. and Michelsen, O., 1979, The use of porosity logs in lithology determination, lithostratigraphy and basin analysis, in D.Gill and D.F. Merriam, eds., Geomathematical and petrophysical studies in sedimentology: Oxford, Pergamon Press, Computers in Geology Series, p. 71-79.
- Roehl, P.O. and Choquette, eds., 1985, Carbonate pertroleum reservoirs: New York, Springer-Verlag, 622 p. Contains 35 papers on facies and petrophysics of selected carbonate petroleum reservoirs of different geologic ages.
- Russell, D.J., 1985, Depositional analysis of a black shale by using gamma-ray stratigraphy--The Upper Devonian Kettle Point Formation of Ontario: Bulletin of Canadian Petroleum Geology, v. 33(2), June, p. 236-253.
- Schlumberger, 1981, Dipmeter interpretation volume 1--Fundamentals: New York, Schlumberger Ltd., 61 p.
- Selley, R.C., 1979, Dipmeter and log motifs in North Sea submarine-fan sands: AAPG Bulletin, v. 63(6), p. 905-917.
- Selley, R.C., 1978, Ancient sedimentary environments, 2nd ed.: New York, Cornell University Press, 287 p.

- Selley, R.C., 1975, Subsurface diagnosis of deltaic deposits with reference to the northern North Sea, in Jurassic of the northern North Sea symposium, paper JNNSS/13: Norwegian Petroleum Society, 22 p.
- Selley, R.C., 1974, Environmental analysis of subsurface sediments, in 3rd European formation evaluation symposium transactions, paper J: London, Society of Professional Well Log Analysts, London Chapter, 15 p. Later published in 1976, Subsurface environmental analysis of North Sea sediments: AAPG Bulletin, v. 60(2), p. 184-195. Also published in 1976, The Log Analyst, v. 17(1), January-February, p. 3-11.
- Serra, O., 1985, Fundamentals of well-log interpretation volume

 2--interpretation of various well logs [Diagraphies differees Bases de
 l'interpretation]: Pau, France, Bulletin des Centres de Recherches
 Exploration-Production Elf-Aquataine Memoire 7, 632 p. In French, not yet
 translated into English. The best single reference on application of well
 logs to determination of facies and depositional environments,
 sedimentology, (sedimentary structures, diagenesis and compaction),
 structural geology, and fractures.
- Slack, H.A. and Otte, C., 1960, Electric log interpretation in exploration for stratigraphic traps in shaly sands: AAPG Bulletin, v. 44(12), p. 1874-1894.
- Watney, W.L., 1979, Gammaray-neutron [sic] cross-plots as an aid in sedimentological analysis, in D. Gill and D.F. Merriam, eds., Geomathematical and petrophysical studies in sedimentology: Oxford, Pergamon Press, Computer in Geology Series, p. 81-100.
- Weber, K.J., 1971, Sedimentological aspects of oil fields in the Niger Delta: Geologie en Mijnbouw, v. 50(3), p. 559-576.

Bull thtin of Caradian Percelous Geology, wt 25(2), John, p. 177-26; -

4. FACIES ANALYSIS AND CASE STUDIES

- Adams, S.C. and Kullerud, G., 1984, Depositional patterns of Pennsylvanian sediments in Sullivan County, west-central Indiana, USA: International Journal of Coal Geology, v. 3, p. 349-373.
- Bashem, W.H.M. and Dorfman, M.H., 1983, Facies characterization of carbonates by use of well logs, Sligo Formation (Lower Cretaceous), South Texas, <u>in</u> 24th annual logging symposium transactions, paper SS: Houston, Society of Professional Well Log Analysts, 17 p.
- Carrigy, M.A., 1971, Deltaic sedimentation in Athabasca tar sands: AAPG Bulletin, v. 55(8), p. 1155-1169.
- Flach, P.D. and Mossop, G.D., 1985, Depositional environments of Lower Cretaceous McMurray Formation, Athabasca oil sands, Alberta: AAPG Bulletin, v. 69(8), p. 11195-1207.
- Harris, P.M., Dodman, C.A. and Bliefnick, D.M., 1984, Permian (Guadalupian) reservioir facies, McElroy Field, west Texas, in Harris, P.M., ed., Carbonate sands--A core workshop: Tulsa, Society of Economic Paleontologists and Mineralogists, Core Workshop No. 5, p. 136-174.
- Jageler, A.H. and Matuszak, D.R., 1972, Use of well logs and dipmeters in stratigraphic-trap exploration, in R.E. King, ed., Stratigraphic oil and gas fields—Classification, exploration methods and case histories: Tulsa, American Association of Petroleum Geologists, Memoir 16, p. 107-135.
- Johnson, H.D. and Stewart, D.J., 1985, Role of clastic sedimentology in the exploration and production of oil and gas in the North Sea, <u>in</u> P.J. Brenchley and B.P.J. Williams, eds., Sedimentology--Recent developments and applied aspects: Boston, Blackwell Scientific Publications, p. 249-310.
- Mitchell-Tapping, H.J., 1983, Petrophysical evaluation of the Smackover oomoldic porosity of East Texas and Southern Arkansas: The Log Analyst, v. 24(4), July-August, p. 3-13.
- Nelson, H.W. and Glaister, R. P., 1978, Subsurface environmental facies and reservoir relationships of the McMurray oil sands, northeastern Alberta: Bulletin of Canadian Petroleum Geology, v. 26(2), June, p. 177-207.
- Olsen, R.S., 1982, Depositional environment of Jurassic Smackover Sandstones, Thomasville Field, Rankin County Mississippi: Transactions of the Gulf Coast Association of Geological Societies, v. 32, p. 59-66.
- Putnam, P.E., 1982, Aspects of the petroleum geology of the Lloydminster heavy oil fields, Alberta and Saskatchewan: Bulletin of Canadian Petroleum Geology, v. 30(2), June, p. 81-111.

Witherbee, L.J., Godfrey, R.D. and Dimelow, T.E., 1983, Predicting turbidite-contourite reservoir intervals in tight gas sands—A case study from the Mancos B Sandstone, in 1983 SPE/DOE symposium on low permeabilit gas reservoirs, proceedings, SPE/DOE-11609: Dallas, Society of Petroleum Engineers, p. 87-94.

P.A. Scholle and D. Spearing, eds., Sandstone deposition, in Tulsa, American Association of Patroleum Geologists, Memoir 31, p. 139-178.

define depositional trends in Lower Vilcox sands, McMullen Gounty, Texas Bulletin of the South Texas Geological Society, v. 23(6), p. 16-28.

course: Houston Dresser Industries, publications 9333, variously paging and interpretation 9333, variously paging and Includes a discussion on the use of SP for evaluating depositional environments.

Fisher, W.L., 1969, Packes characterization of Gulf Comst basis delta systems with some Solocens analogues: Transactions of the Gulf Comst Association of Geological Societies, v. 19, p. 239-261.

Plores, A.M., Toth, J.C. and Moore, T.A., 1982, Use of geophysical logs in recognizing depositional environments in the Tungue River Number of the Fort Deion Formation, Fowder River Area, Myoming and Montager U.S.

ous, L., 1969, Geological applications of well logs, in 10th annual longing symposium transactions, paper AA: Houston, Society of Professional Well Log Analysts, 44 p.

allower, W.B., 1968, Depositional systems of the Lover Wilson Group, north central Gulf Coast Besin: Transactions of the Gulf Coast Association of Geological Societies, v. 13, p. 275-289.

teler, A.B. and Matuszak, D.R., 1972. Use of well logs and dipmeters in stratigraphic-trap exploration, in B.E. King, ad., Stratigraphic oil and gas field—Glassification, exploration methods and case histories. Tules Arbitum Association of Petroleon Geologists, Memoir 16, p. 107-135.

lein, G. Sev., 1984, Vertical sequences and log shapes of major mandatone reservoir systems: Boston, INRNO Press. A chart with references.

lein, G. dav., 1989, Sindstone depositional models for exploration for forsil fuels: Minneapolis, Capas Division, Burgess Publishing Co., 149 p.

from electrical measurements was introduction: Transactions of the Bull Coast Association of Geological Societies, v. 18, b. 126-241

IDENTIFICATION OF DEPOSITIONAL ENVIRONMENTS BY SP PATTERNS

- Allan, D.R., 1975, Identification of sediments—Their depositional environment and degree of compaction from well logs, in G.V. Chilingarian and K.H. Wolf, eds., Compaction of coarse—grained sediments, I: New York, Elsevier, Developments in Sedimentology 18A, p. 349-401.
- Coleman, J.M. and Prior, D.B., 1982, Deltaic environments of deposition, in P.A. Scholle and D. Spearing, eds., Sandstone depositional environments: Tulsa, American Association of Petroleum Geologists, Memoir 31, p. 139-178.
- Coppinger, W.W. and Schlutz, A.L., 1983, Using the self-potential curve to define depositional trends in Lower Wilcox sands, McMullen County, Texas:
 Bulletin of the South Texas Geological Society, v. 23(6), p. 16-28.
- Dresser Atlas, 1984, Well logging and interpretation techniques, the home study course: Houston, Dresser Industries, publications 9333, variously paginated. Includes a discussion on the use of SP for evaluating depositional environments.
- Fisher, W.L., 1969, Facies characterization of Gulf Coast basin delta systems with some Holocene analogues: Transactions of the Gulf Coast Association of Geological Societies, v. 19, p. 239-261.
- Flores, R.M., Toth, J.C. and Moore, T.A., 1982, Use of geophysical logs in recognizing depositional environments in the Tongue River Member of the Fort Union Formation, Powder River Area, Wyoming and Montana: U.S. Geological Survey, Open-File Report 82-756, 22 p.
- Fons, L., 1969, Geological applications of well logs, <u>in</u> 10th annual logging symposium transactions, paper AA: Houston, Society of Professional Well Log Analysts, 44 p.
- Galloway, W.E., 1968, Depositional systems of the Lower Wilcox Group, north-central Gulf Coast Basin: Transactions of the Gulf Coast Association of Geological Societies, v. 18, p. 275-289.
- Jageler, A.H. and Matuszak, D.R., 1972, Use of well logs and dipmeters in stratigraphic-trap exploration, <u>in</u> R.E. King, ed., Stratigraphic oil and gas field--Classification, exploration methods and case histories: Tulsa, American Association of Petroleum Geologists, Memoir 16, p. 107-135.
- Klein, G. deV., 1984, Vertical sequences and log shapes of major sandstone reservoir systems: Boston, IHRDC Press. A chart with references.
- Klein, G. deV., 1980, Sandstone depositional models for exploration for fossil fuels: Minneapolis, Cepco Division, Burgess Publishing Co., 149 p.
- Krueger, W.C., 1968, Depositional environments of sandstones as interpreted from electrical measurements—An introduction: Transactions of the Gulf Coast Association of Geological Societies, v. 18, p. 226-241.

- Lock, B.E., 1982, Towards a better understanding of Gulf Coast Miocene deep water sediments: Transactions of the Gulf Coast Association of Geological Societies, v. 32, p. 283-288.
- Norwood, E.M., 1974, Lithofacies mapping—A descriptive tool for ancient delta systems of the Louisiana outer continental shelf: Transactions of the Gulf Coast Association of Geological Societies, v. 24, p. 175-188.
- Nuhfer, E.B. and Nurmi, R.D., 1976, Bibliography of references for recognition of depositional environment from wireline log data: West Virginia Geological and Economic Survey, Mineral Briefs Series, 15 p.
- Pirson, S.J., 1983, Geologic well log analysis, 3rd ed.: Houston, Gulf Publishing Co., 475 p.:
- Ruoff, W.A., 1976, A technique for interpreting depositional environments of sandstone from the SP log using a computer: The Log Analyst, v. 17(4), July-August, p. 3-10.
- Saitta, B.S. and Visher, G.S., 1968, Subsurface study of the southern portion of the Bluejacket delta, in A guidebook to the geology of the Bluejacket-Bartlesville Sandstone, Oklahoma: Oklahoma Geological Society, p. 52-65.
- Snedden, J.W., 1984, Validity of the use of the spontaneous potential curve shape in the interpretation of sandstone depositional environments:

 Transactions of the Gulf Coast Association of Geological Societies, v. 34. p. 255-263.
- Tizzard, P.G. and Lerbekmo, J.F., 1975, Depositional history of the Viking Formation, Suffield area, Alberta, Canada: Bulletin of Canadian Petroleum Geology, v. 23(4), p. 715-752.
- Visher, G.S., 1965, Use of vertical profile in environmental reconstruction: AAPG Bulletin, v. 49(1), p. 41-61. Paper generally cited as the basis of environmental interpretation of the SP curve.

introduction, Part 7 Streeting askid interpletations the Low Assister, w

6. DIPMETER APPLICATIONS

- Babcock, E.A., 1978, Measurement of subsurface fractures from dipmeter logs: AAPG Bulletin, v. 62(7), p. 1111-1126.
- Baker, J.D., 1984, Dipmeter Advisor—an expert log analysis system at Schlumberger in P.H. Winston and K.A. Prendergast, eds., The AI business; the commercial uses of artificial intelligence: Cambridge, Massachussetts, The MIT Press, p. 51-65.
- Beaudoin, B., Pinoteau, B. and Delhomme, J.P., 1983, Geological analysis of logs and dipmeter data for well-to-well correlation, in 24th annual logging symposium transactions, paper BBB: Houston, Society of Professional Well Log Analysts, 18 p. Deep-sea fan example.
- Bell, J.S. and Gough, D.I., 1982, The use of borehole breakouts in the study of crustal stress, in M.D. Zoback and B.C. Haimson, eds., Workshop on hydraulic fracturing stress measurements [December 2-5], proceedings: U.S. Geological Survey Open-file Report 82-1075, p. 539-557.
- Bell, J.S. and Gough, D.I., 1979, Northeast-southwest compressive stress in Alberta: evidence from oil wells: Earth and Planetary Science Letters, v. 45, p. 475-482.
- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part I--Suggested guidelines: The Log Analyst, v. 26(1), January-February, p. 41-51.
- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part II--Wellsite data gathering considerations: The Log Analyst, v. 26(2), March-April, p. 25-41.
- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part III--Computer processing considerations: The Log Analyst, v. 26(3), May-June, p. 18-31.
- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part IV--Structural interpretation: The Log Analyst, v.26(4), July-August, p. 21-43.
- Bigelow, E.L., 1985, Making more intelligent use of log derived dip information, Part V--Stratigraphic interpretation: The Log Analyst, v. 26(5), September-October, p. 25-64.
- Bigelow, E.L., 1982, Application of dip-related measurements to a complex carbonate-clastic depositional environment: The Log Analyst, v. 23(2), March-April, p. 9-30.
- Campbell, R.J., Jr., 1968, Stratigraphic applications of dipmeter data in Mid-Continent: AAPG Bulletin, v. 52(9), p. 1700-1719.

- Chauvel, Y., Seeburger, D.A. and Castro-Orjuela, A., 1984, Applications of the SHDT (Stratigraphic High Resolution Dipmeter) to the study of depositional environments, in 25th annual logging symposium transactions, paper G: Houston, Society of Professional Well Log Analysts, 23 p.
- Cox, J.W., 1983, Long axis orientation in elongated boreholes and its correlation with rock stress data, <u>in</u> 24th annual logging symposium transactions, paper J: Houston, Society of Professional Well Log Analysts, 17 p.
- Davis, R., Austin, H., Carlbom, I, Frawley, B., Pruchnik, P., Sneiderman, R., and Gilreath, J.A., 1981, The Dipmeter Advisor--Interpretation of geological signals, in 7th international joint conference on artificial intelligence, [Vancouver, British Columbia, Canada], proceedings: p. 846-849.
- Donovan, M.P. and Nelson, R.F., 1985, The Dual Dipmeter service in high-resistivity formations in Eastern regional meeting [Morgantown, W. Vir., November 5-8], proceedings, SPE-14492: Dallas, Society of Petroleum Engineers, p. 39-46.
- Gershman, A., 1982, Building a geological expert system for dipmeter interpretation, <u>in</u> European conference on artificial intelligence, proceedings: p. 139-140.
- Gilreath, J.A., 1977, Dipmeter, in L.W. LeRoy, D.O. LeRoy and J.W. Raese, eds., Subsurface geology, 4th ed.: Golden, CO., Colorado School of Mines, part 3, chapter 22, p. 389-396.
- Gilreath J.A., Healy, J.S. and Yelverton, J.N., 1969, Depositional environments defined by dipmeter interpretation: Transactions of the Gulf Coast Association of Geological Societies, v. 19, p. 101-111.
- Gilreath, J.A. and Stephens, R.W., 1971, Distributary front deposits: Transactions of the Gulf Coast Association of Geological Societies, v. 21, p. 233-243.
- Gilreath, J.A. and Maricelli, J.J., 1964, Detailed stratigraphic control through dip computations: AAPG Bulletin, v. 48(12), p. 1902-1910.
- Gough, D.I. and Bell, J.S., 1982, Stress orientations from borehole fractures with examples from Colorado, east Texas, and northern Canada: Canadian Journal of Earth Sciences, v. 19(7), p. 1358-1370.
- Gough, D.I. and Bell, J.S., 1981, Stess orientations from oil-well fractures in Alberta and Texas: Canadian Journal of Earth Sciences, v. 18, p. 638-645.
- Holt, O.R., 1983, Relating Diplogs to Practical Geology: Houston, Dresser Industries, publication 1603, 69 p.
- Holt, O.R., 1972, Structural geologic considerations in diplog interpretation, in 13th annual logging symposium transactions, paper Q: Houston, Society of Professional Well Log Analysts, 30 p. Later published in 1973, The Log Analyst, v. 14(2), March-April, p. 3-9.

- Jageler, A.H. and Matuszak, D.R., 1972, Use of well logs and dipmeters in stratigraphic-trap exploration, in R.E. King, ed., Stratigraphic oil and gas fields—Classification, exploration methods and case histories: Tulsa, American Association of Petroleum Geologists, Memoir 16, p. 107-135.
- Kerzner, M.G., 1983, Formation dip determination-An artificial intelligence approach: The Log Analyst, V. 24(5), September-October, P. 10-22.
- Nurmi, R.D., 1984, Geological evaluation of high resolution dipmeter data, in 25th annual logging symposium transactions, paper YY: Houston, Society of Professional Well Log Analysts, 23 p.
- Payre, X. and Serra O., 1979, Turbidites recognized through dipmeter, <u>in</u> 6th European logging symposium transactions, paper K: London, Society of Professional Well Log Analysts, London Chapter, 26 p.
- Plumb, R.A. and Hickman, S.H., 1985, Stress-induced borehole elongation—A comparison between the four-arm dipmeter and the borehole televiewer in the Auburn geothermal well: Journal of Geophysical Research, v. 90(B7), p. 5513-5521.
- Rider, M.H., 1978, Dipmeter log analysis--An essay, <u>in</u> 19th annual logging symposium transactions, paper G: Houston, Society of Professional Well Log Analysts, p.
- Sallee, J.E. and Wood, B.R., 1982, Use of microresistivity from the dipmeter to improve formation evaluation in thin sands, northeast Kalimantan, Indonesia, in Offshore South East Asia conference, proceedings, SPE-10462: Dallas, Society of Petroleum Engineers, 24 p. Later published in 1984, Journal of Petroleum Technology, v. 36(9), p. 1535-1544.
- Schlumberger, 1981, Dipmeter interpretation volume 1--fundamentals: New York, Schlumberger Ltd., 61 p.
- Selley, R.C., 1979, Dipmeter and log motifs in North Sea submarine-fan sands: AAPG Bulletin, v. 63(6), p. 905-917.
- Shields, C., 1974, The dipmeter used to recognize and correlate depositional environment, in 3rd European formation evalution symposium transactions, paper, H: London, Society of Professional Well Log Analysts, London Chapter, 15 p.
- Smith R.G. and Baker, J.D., 1983, The Dipmeter Advisor system, a case study in commercial expert system development, in 8th international joint conference on artifical intelligence, proceedings: International Joint Conference on Artificial Intelligence, p. 122-129.
- Smith, R.G. and Young, R.L., 1984, The design of the dipmeter advisor system in ACM annual conference [October, 1984], proceedings: New York, Association for Computing Machinery, p. 15-23.

- Stuart-Bruges, W.P., 1984, A dipmeter for use in oil based muds, <u>in</u> 9th international formation evaluation symposium transactions, paper 32: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 8 p.
- Van Golf-Racht, T.D., 1982, Logging versus fracture evaluation <u>in</u> Fundamentals of fractured reservoir engineering: Amsterdam, Elsevier, Developments in pertroleum science, 12, Chapter 5, p. 255-294.
- Vincent, Ph., Gartner, J.E., Attali, G., 1977, An approach to detailed dip determination using correlation by pattern recognition: Dallas, Society of Petroleum Engineers, 52nd annual meeting [Denver] preprint SPE-6823. Later published in 1979, Journal of Petroleum Technology, v. 31(2), p. 232-240.
- Zoback, M.D., Moos, D., Mastin, L., and Anderson, R.N., 1985, Well bore breakouts and in situ stress: Journal of Geophysical Research, v. 90(B7), p. 5523-5530.

intelligence, [Vancouver, British Colombia, Canada], proceedings:

Doveton, J.H. and Sormanant, E., 198, log normalization by brend norform analysis: The Log Analysis, v. 22(4), July-August, c. 3-8.

53

- 7. COMPUTER APPLICATIONS (INCLUDING AUTOMATED LITHOFACIES ANALYSIS)
- Baker, J.D., 1984, Dipmeter Advisor--an expert log analysis system at Schlumberger in P.H. Winston and K.A. Prendergast, eds., The AI business; the commercial uses of artificial intelligence: Cambridge, Massachussetts, The MIT Press, p. 51-65.
- Berteig, V., Helgeland, J., Mohn, E., Langeland, T., van der Wel, D., 1985, Geofacies determination by logging data, <u>in</u> 26th annual logging symposium transactions, paper TT: Houston, Society of Professional Well Log Analysts, 25 p.
- Bornemann E. and Doveton, J.H., 1983, Lithofacies mapping of Viola Limestone in south central Kansas based on wireline logs: AAPG Bulletin, v. 67(4), p. 609-623.
- Davis, R., Austin, H., Carlbom, I, Frawley, B., Pruchnik, P., Sneiderman, R., and Gilreath, J.A., 1981, The Dipmeter Advisor—Interpretation of geological signals, in 7th international joint conference on artificial intelligence, [Vancouver, British Columbia, Canada], proceedings: International Joint Conference on Artificial Intelligence, p. 846-849.
- Delfiner, P., Delhomme, J.P. and Pelissier-Cobescure, J., 1983, Application of geostatistical analysis to the the evaluation of petroleum reservoirs with well logs, in 24th annual logging symposium transactions, paper WW:
 Houston, Society of Professional Well Log Analysts, 26 p.
- Delfiner, P.C., Peyret, O. and Serra, O., 1984, Automatic determination of lithology from well logs: Dallas, Society of Petroleum Engineers, 59th annual meeting (Houston) preprint SPE-13290, 8 p.
- Doveton, J.H., 1983, Automated lithofacies analysis from well logs, <u>in</u> 12th annual geochautauqua short course notes, November 8, 1983: Lawrence, Kansas Geological Survey/University of Kansas, 188 p.
- Doveton, J.H. and Cable, H.W., 1979, Fast matrix methods for the lithological interpretation of geophysical logs, in D. Gill and D.F. Merriam, eds., Geomathematical and petrophysical studies in sedimentology: Oxford, Pergamon Press, Computers in Geology Series, p. 101-116.
- Doveton, J.H. and Bornemann, E., 198, Log normalization by trend surface analysis: The Log Analyst, v. 22(4), July-August, p. 3-8.
- Doveton, J.H. Ke-An, Z. and Davis, J.C., 1984, Three-dimensional trend mapping using gamma-ray well logs: Simpson Group, south-central Kansas: AAPG Bulletin, v. 68(6), p. 690-703.
- Gershman, A., 1982, Building a geological expert system for dipmeter interpretation, in European conference on artificial intelligence, proceedings: p. 139-140.

- Hempkins, W.B., 1977, Multivariate statistical approaches in formation evaluation, in 18th annual logging symposium transactions, paper DD: Houston, Society of Professional Well Log Analysts, 23 p.
- Lanning, E.N. and Johnson, D.M., 1983, Automated identification of rock boundaries—An application of the Walsh transform to geophysical well-log analysis: Geophysics, v. 48(2), p. 197.
- Magara, K., 1979, Identification of sandstone body types by computer method: Journal of the International Association for Mathematical Geology, v. 11(3), p. 269-283.
- Merkel, R.H. and Head, W.J., 1977, The use of computerized log analysis to determine in situ lithologic characteristics pertinent to secondary recovery: Bulletin of Canadian Petroleum Geologists, v. 25(2), May, p. 291-304.
- Pirie, G., 1984, Computer-generated interpretations of stratigraphy and depositional environments from a logging/core study--Cotton Valley Group, East Texas, in W.P.S. Ventress, D. Bebout, B.F. Perkings and C.H. Moore, eds., The Jurassic of the Gulf rim: Gulf Coast Section of the Society of Economic Paleontologists and Mineralogists p. 323-331.
- Pirie, G., 1982, Geology and log study of tight gas sandstones--Cotton Valley Group: Transactions of the Gulf Coast Association of Geological Societies, v. 32, p. 77-88.
- Rider, M.H. and Laurier, D., 1979, Sedimentology using a computer treatment of well logs, in 6th European formation evaluation symposium transactions, paper J: London, Society of Professional Well Log Analysts, London Chapter, 12 p.
- Robinson, J.E., 1982, Computer Applications in Petroleum Geology: New York, Hutchinson Publishing Company, chapter 12, Computer analysis of well logs, p. 143-151. Discussion of unusual graphic displays of log data.
- Ruoff, W.A., 1976, A technique for interpreting depositional environments of sandstone from the SP log using a computer: The Log Analyst, v. 17(4), July-August, p. 3-10.
- Serra, O. and Abbott, H.T., 1980, The contribution of logging data to sedimentary sedimentology and stratigraphy: Dallas, Society of Petroleum Engineers, 55th annual meeting (Dallas) preprint SPE-9270, 19 p. Later published in 1982, Society of Petroleum Engineers Journal, v. 22(1), p. 117-131.
- Serra, O. and Sulpice, L., 1975, Sedimentological analysis of sand-shale series from well logs, in 16th annual logging symposium transactions, paper W:
 Houston, Society of Professional Well Log Analysts, 23 p.
- Serra, O., Delfiner, P., Levert, J.C., 1985, Lithology determination from well-logs--Case studies, in 26th annual logging symposium transactions, paper WW: Houston, Society of Professional Well Log Analysts, 19 p.

- Shaw, B.R. and Cubitt, J.M., 1979, Stratigraphic correlation of well logs--An automated approach, in D. Gill and D.F. Merriam, eds., Geomathematical and petrophysical studies in sedimentology: New York, Pergamon Press, p. 127-148.
- Smith R.G. and Baker, J.D., 1983, The Dipmeter Advisor system, a case study in commercial expert system development, in 8th international joint conference on artifical intelligence: International Joint Conference on Artificial Intelligence, p. 122-129.
- Smith, R.G. and Young, R.L., 1984, The design of the Dipmeter Advisor system in ACM annual conference [October, 1984], proceedings: New York, Association for Computing Machinery, p. 15-23.
- Szendro, D., 1983, A statistical method for lithologic interpretation from well logs: The Log Analyst, v. 24(3), May-June, p. 16-23.
- Wolff, M. and Pelissier-Combescure, J., 1982, Faciolog-Automatic electrofacies determination in 23rd annual logging symposium transactions, paper FF: Houston, Society of Professional Well Log Analysts, 23 p.

56

September-Parobec, p. 3-37; Reprinted in 1961, Speciation, Macaton,

8. NATURAL GAMMA-RAY SPECTROMETRY

- (Clay analysis, fracture identification and determination of organic carbon)
- Donovan, W.S. and Hilchie, D.W., 1979, Natural gamma ray emission in the Muddy J Formation in eastern Wyoming, in 7th formation evaluation symposium transactions, paper B: Calgary, Canadian Well Logging Society, 11 p. Later published in 1981, The Log Analyst, v. 22(2), February-March, p. 17-22.
- Fertl, W.H., 1983, Gamma ray spectral logging--A new evaluation frontier, part I--Principles: World Oil, v. 196(4), March, p. 79-91. A seven-part series. See References.
- Fertl, W.H., 1983, Gamma ray spectral logging--A new evaluation frontier, part II--Application in carbonates: World Oil, v. 196(5), April, p. 87-98.
- Fertl, W.H., 1983, Gamma ray spectral logging-A new evaluation frontier, part III--Measuring source rock potential: World Oil, v. 196(6), May, p. 147-155.
- Fertl, W.H., 1983, Gamma ray spectral logging--A new evaluation frontier, part IV--Application in fractured shale: World Oil, v. 196(7), June, p. 189-204.
- Fertl, W.H., 1983, Gamma ray spectral logging--A new evaluation frontier, part V--Application in clastic reservoirs: World Oil, v. 197(2), August 1, p. 57-63.
- Fertl, W.H., 1983, Gamma ray spectral logging--A new evaluation frontier, part VI--Clay analysis in shaly sands: World Oil, v. 197(4), October, p. 99-112.
- Fertl, W.H., 1983, Gamma ray spectral logging--A new evaluation frontier, part VII--Application in workovers/recompletions: World Oil, v. 197(5), November, p. 85-88.
- Fertl, W.H., 1979, Gamma ray spectral data assists in complex formation evaluation, in 6th European formation evaluation symposium transactions, paper Q: London, Society of Professional Well Log Analysts, London Chapter. Later published in 1979, The Log Analyst, v. 20(5), September-October, p. 3-37. Reprinted in 1981, Spectralog: Houston, Dresser Industries, publication 3334.
- Fertl, W.H., Chilingarian, G.V. and Yen, T.F., 1982, Use of natural gamma ray spectral logging in evaluation of clay minerals: Energy Sources, v. 6(4), p. 335-360.
- Fertl, W.H. and Frost E., Jr., 1979, Evaluation of shaly clastic reservoir rocks: Dallas, Society of Petroleum Engineers, 54th annual meeting (Las Vegas) preprint SPE-8450. Later published in 1980, Journal of Petroleum Technology, v. 31(9), p. 1641-1646. Reprinted in 1981, Spectralog: Houston, Dresser Industries, publication 3334.

- Fertl, W.H. and Rieke, H.H., III, 1979, Gamma ray spectral evaluation techniques identify fractured shale reservoirs and source-rock characteristics: Dallas, Society of Petroleum Engineers, 54th annual meeting (Las Vegas) preprint SPE-8454. Later published in 1980, Journal of Petroleum Technology, v. 32(11), p. 2053-2062.
- Gilchrist, W.A., Jr., Quirein, J.A., Boutemy, Y.L., Tabanou, J.R., 1982, Application of gamma ray spectroscopy to formation evaluation, in 23rd annual logging symposium transactions, paper B: Houston, Society of Professional Well Log Analysts, 28 p.
- Heinze, D.M., 1985, Clay identification and amount measured by laboratory techniques compared to well log responses: application to tight gas sands and shales: Albuquerque, Sandia National Laboratory Report SAND85-0312, March, 36 p.
- Hassan, M., 1973, Radio elements and diagenesis in shale and carbonate sediments, in 2nd annual logging symposium transactions, paper 7: Paris, Scoiety of Professional Well Log Analysts, Paris Chapter (SAID), 12 p.
- Koizumi, C.J., 1985, Computer determination of calibration and environmental corrections for a natural spectral gamma ray logging system: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14186, 12 p.
- Kowalski, J.J. and Asekun, S.O., 1979, It may not be shale, <u>in</u> 20th annual logging symposium transactions, paper P: Houston, Society of Professional Well Log Analysts, 15 p.
- Ruhovets, N. and Fertl, W.H., 1982, Volumes, types and distribution of clay minerals in reservoir rocks based on well logs, in SPE/DOE unconventional gas recovery symposium, proceedings, SPE/DOE-10796: Dallas, Society of Petroleum Engineers, p. 67-82.
- Schlumberger, 1982, Fundamentals of natural gamma ray spectrometry and essentials of NGS interpretation: Singapore, Schlumberger Ltd., 69 p.
- West, F.G. and Laughlin, A.W., 1976, Spectral gamma logging in crystalline basement rocks: Geology, v. 4(10), p. 617-618.
- Zelt, F.B., 1985, Natural gamma-ray spectrometry, lithofacies and depositional environments of selected upper cretaceous marine mudrocks, western United States, including Tropic Shale and Tununk Member of Mancos Shale: Princeton University, unpublished PhD. dissertation, 354 p.
- Zelt, F.B., 1985, Paleocenographic events and lithologic/geochemical facies of the Greenhorn marine cycle (Upper Cretaceous) examined using natural gamma-ray spectroscopy, in L. Pratt, E.G. Kaufmann, F.B. Zelt, eds., SEPM field trip guidebook number 4, 1985 midyear meeting, Golden, Colorado: Tulsa, Society of Economic Paleontologists and Mineralogists, p. 49-59.

- 9. ORGANIC CARBON AND SOURCE ROCK DETERMINATION (See also 8. Natural gamma-ray spectrometry)
- Autric, A. and Dumensil, P., 1985, Resistivity, radioactivity and sonic transit time logs to evaluate the organic content of low permeability rocks: The Log Analyst, v. 26(3), May-June, p. 36-45.
- Dellenbach, J., Espitalie, J. and Lebreton, F., 1983, Source rock logging, in 8th European logging symposium transactions, paper D: London, Society of Professional Well Log Analysts, London Chapter, 19 p.
- Fertl, W.H., 1983, Gamma ray spectral logging, part III--Measuring source rock potential: World Oil, v. 196(6), p. 147-155.
- Gautier, D.L, Starkey, H.C., Takahashi, K.I., 1983, Clays, cations and geophysical log response of gas-producing and non-producing zones in the Gammon Shale (Cretaceous), southwestern North Dakota: Clays and Clay Minerals, v. 31(2), p. 122-128.
- Meissner, F.F., 1978, Petroleum geology of the Bakken Formation Williston basin, North Dakota and Montana, in Williston basin symposium: Montana Geological Society, p. 207-227. Later reprinted in 1984, in G.Demaison and R.J. Murris, eds., Petroleum geochemistry and basin evaluation: Tulsa, American Association of Petroleum Geologists, Memoir 35, p. 159-179.
- Mendelson, J.D. and Toksoz, M.N., 1985, Source rock characterization using multivariate analysis of log data, in 26th annual logging symposium transactions, paper UU: Houston, Society of Professional Well Log Analysts, 21 p.
- Meyer, B.L. and Nederlof, M.H., 1984, Identification of source rocks on wireline logs by density/resistivity and sonic transit time/resistivity crossplots: AAPG Bulletin v. 68(2), p. 121-129.
- Russell, D.J., 1985, Depositional analysis of a black shale by using gamma-ray stratigraphy--The Upper Devonian Kettle Point Formation of Ontario: Bulletin of Canadian Petroleum Geology, v. 33(2), June, p. 236-253.
- Schmoker, J.W., 1983, Organic carbon in Bakken Formation, U.S. Portion of Williston Basin: AAPG Bulletin, 67(12), p. 2165-2174.
- Schmoker, J.W., 1981, Determination of organic-matter content of Appalachian Devonian shales from gamma-ray logs: AAPG Bulletin, 65(7), p. 1285-1298.
- Schmoker, J.W., 1979, Determination of organic content of Appalachian Devonian shales from formation-density logs: AAPG Bulletin, 63(9), p. 1504-1509.
- Smagala, T.M., Brown, C.A. and Nydegger, 1984, Log-derived indicator of thermal maturity, in J. Woodward, F.F. Meissner, J.L. Clayton, eds., Hydrocarbon source rocks of the greater rocky mountain region: Denver, Rocky Mountain Association of Geologists, p. 355-363.

- Autric, A. and Dumensil, P., 1985, Resistivity, radioactivity and sonic transit time logs to evaluate the organic content of low permeability rocks: The Log Analyst, v. 26(3), May-June, p. 36-45.
- Boardman, C.R., Hammack, G.W., Fertl, W.H. and Atkinson, C.H., 1972, Evaluation of low-permeability gas-bearing formations in Rio Blanco County, Colorado: Dallas, Society of Petroleum Engineers, 47th annual meeting [San Antonio] preprint SPE-4097. Later published in 1973, Journal of Petroleum Technology, v. 25(10), p. 1125-1129.
- Brown, J.A., Jackson, J.A. and Koelle, A.R., 1985, Western gas sands project Los Alamos NMR well logging tool development: Los Alamos, Los Alamos National Laboratory, Report LA-10374-PR, March, 77 p.
- CER Corporation, 1986, Multiwell experiment--Well log analysis of coastal interval: Las Vegas, Nevada, CER Corporation [Prepared for Sandia National Laboratory], 98 p.
- CER Corporation, 1984, Multiwell experiment--Well log analysis of the paludal interval: Las Vegas, Nevada, CER Corporation [Prepared for Sandia National Laboratory], 103 p.
- Chilholm, J.L., Schenewerk, P.A. and Donaldson, E.C., 1985, A comparison of shaly sand interpretation techniques in the Mesaverde Group of the Unita Basin, Utah: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14281, 12 p.
- Dawson-Grove, G.E., 1979, Log analysis in tight gas sands--A reconnaissance study, in 7th formation evaluation symposium transactions, paper H: Calgary, Canadian Well Logging Society, 14 p.
- Boardman, C.R., Hammack, G.W., Fertl, W.H. and Atkinson, C.H., 1972, Evaluation of low-permeability gas-bearing formations in Rio Blanco County, Colorado: Dallas, Society of Petroleum Engineers, 47th annual meeting (San Antonio) preprint SPE-4097. Later published in 1973, Journal of Petroleum Technology, v. 25(10), p. 1125-1129.
- Frank, R.W., 1978, Formation evaluation with logs in the Ark-La-Tex Cotton Valley: Transactions of the Gulf Coast Association of Geological Societies, v. 28, Part 1, p. 131-141.
- Henry, K.C., 1979, Gas detection in the extremely shaly Bowdoin Formation of northern Montana, in 20th annual logging symposium transactions, paper T: Houston, Society of Professional Well Log Analysts, 45 p.
- Hunt, E.R., Raymond, D.H., Haskett, C.E. and Pirie, R.G., 1981, Application of new well logs and geology to fracturing and producibility in tight gas sands, Cotton Valley Group, in 1981 SPE/DOE symposium on low permeability gas reservoirs, proceedings, SPE/DOE-9832: Dallas, Society of Petroleum Engineers, p. 35.

- Jackson, J.A., Brown, J.A. and Crawford, T.R., 1981, Remote characterization of tight gas formations with a new NMR logging tool, in 1981 SPE/DOE symposium on low permeability gas reservoirs, proceedings, SPE/DOE-9860: Dallas, Society of Petroleum Engineers, p. 313-320.
- Jennings, J.B. and Carroll, H.B. Jr., eds., 1982, Western tight gas sands advanced logging workshop [March 17-18, 1981], proceedings: U.S. Department of Energy, Bartlesville Energy Technology Center, Report CONF-8103113, April 1982, 253 p.
- Knutson, C.F., 1984, Reservoir evaluation and geologic modeling for the Clinton eastern tight gas formation, Phase I final report: U.S. Department of Energy, Morgantown Center Report DOE/MC/21148, 73 p.
- Kukal, G.C., 1984, A systematic approach for the effective log analysis of tight gas sands, <u>in</u> SPE/DOE/GRI unconventional gas recovery symposium, proceedings, SPE/DOE/GRI-12851: Dallas, Society of Petroleum Engineers, p. 209-220.
- Kukal, G.C., 1983, Log analysis in low-permeability gas sand sequence--Correcting for variable unflushed gas saturation, in 23rd annual logging symposium transactions, paper F: Houston, Society of Professional Well Log Analysts, 18 p.
- Kukal, G.C., 1981, Determination of fluid corrected porosity in tight gas sands and in formations exhibiting shallow invasion profiles, in 1981 SPE symposium on low permeability gas reservoirs, proceedings, SPE-9856: Dallas, Society of Petroleum Engineers, p. 289-299.
- Kukal, G.C., 1979, Formation evaluation and gas detection in shallow, low-permebility shaly sands of the Northern Great Plains province, in 1979 SPE symposium on low permeability gas reservoirs, proceedings, SPE-7920: Dallas, Society of Petroleum Engineers, p. 85-98. Later published in 1981, Journal of Petroleum Technology, v. 33(10), p. 1976-1984.
- Kukal, G.C., 1978, Log evaluation of compacted shaly sands of the Mesaverde Group, Unita Basin, Utah, in 4th annual DOE symposium on enhanced oil and gas recovery and improved drilling methods, proeceedings, volume 2, paper E-1: U.S. Department of Energy, 18 p.
- Kukal, G.C., Biddison, C.L., Hill, R.E., Monson, E.R. and Simons, K.E., 1983, Critical problems hindering accurate log interpretation of tight gas sand reservoirs, in 1983 SPE/DOE symposium on low permeabilty gas reservoirs, proceedings, SPE/DOE-11620: Dallas, Society of Petroleum Engineers, p. 181-190.
- Kukal, G.C., Biddison, C.L., Hill, R.E., Monson, E.R. and Simons, K.E., 1983, Tight gas sands log interpretation--Problem study: Chicago, Gas Research Institute, final report GRI-82/0094, July 1982, 181 p.
- Kukal, G.C. and Simons, K.E., 1985, Log analysis techniques for quantifying the permeability of sub-millidarcy sandstone reservoirs, in 1985 SPE/DOE symposium on low permeability reservoirs, proceedings, SPE/DOE-13880: Dallas, Society of Petroleum Engineers, p. 303-310.

- Murphy, W.F., III, 1984, Acoustic measures of partial gas saturation in tight sandstones: Journal of Geophysical Research, v. 89(Bl3), p. 11,549-11,559.
- Nur, A. and Raible, C., 1983, Sonic and electrical properties of partially saturated tight gas sands: U.S. Department of Energy, Report DOE/BC/10498-5, March 1983, 54 p.
- Nydegger, G.L., Rice, D.D., Brown, C.A., 1979, Development of shallow gas reserves in low-permeability reservoirs of Late Cretaceous age, Bowdoin Dome area, north-central Montana, in 1979 SPE symposium on low permeability gas reservoirs, proceedings, SPE-7945: Dallas, Society of Petroleum Engineers, p. 315-323. Later published in 1980, Journal of Petroleum Technology, v. 32(12), p. 2111-2120.
- Osoba, J.S. and Raible, C.J., 1982, Study of sonic, neutron and density logging of low permeability gas sands: U.S. Department of Energy, Bartlesville Energy Technology Center, Report DOE/BC/00010-33, May 1982, 63 p.
- Osoba, J., Gist, R. and Carroll, H., 1981, Log evaluation techniques in Uinta basin found faulty: World Oil, v. 192(6), June, p. 235-244.
- Pirie, G., 1982, Geology and log study of tight gas sandstones--Cotton Valley Group: Transactions of the Gulf Coast Association of Geological Societies, v. 32, p. 77-88.
- Rosepiler, M.J., 1981, Calculation and significance of water saturations in low porosity shaly gas sands, in 23rd annual logging symposium transactions, paper C: Houston, Society of Professional Well Log Analysts, 21 p. Also published in condensed form 1981, Oil and Gas Journal, v. 79(28), July 13, p. 180-187.
- Volk, L.J., Carroll, H.B. and Raible, C.J., 1979, Influence of shale conductivities on the electrical conductivity of low-permeability rocks, in 1979 symposium on low-permeability gas reservoirs [Denver], proceedings, SPE-7918: Dallas, Society of Petroleum Engineers, p. Later published in 1980, Journal of Petroleum Technology, v. 32(5), p. 865-867.
- Wescott, W.A., 1983, Diagenesis of Cotton Valley Sandstone (Upper Jurassic), East Texas--Implications for tight gas formation pay recognition: AAPG Bulletin, v. 67(6), p. 1002-1013. A discussion and reply published in 1985, AAPG Bulletin v. 69(5), p. 813-816.

49th amount assetting (Assetting) prapriet 572-505), he a large continued in

11. ABNORMAL PRESSURE DETECTION AND EVALUATION

- Anderson, R.A., 1972, Fracture pressure gradient determination from well logs: Dallas, Society of Petroleum Engineers, 47th annual meeting [San Antonio] preprint SPE-4135, 15 p.
- Campbell, R., 1974, Abnormal pressure detection using log data, <u>in</u> 3rd European formation evaluation symposium transactions, paper T: London, Society of Professional Well Log Analysts, London Chapter, 16 p.
- Carstens, H. and Dypvik, H., 1981, Abnormal formation pressure and shale porosity: AAPG Bulletin, v. 65(2), p. 344-350.
- Eaton, B.A., 1975, The equation for geopressure prediction from well logs: Dallas, Society of Petroleum Engineers, 50th annual meeting [Dallas] preprint SPE-5544, 9 p.
- Eaton, B.A., 1972, The effect of overburden stress on geopressure prediction from well logs, in 3rd symposium on abnormal pore pressure, proceedings, SPE-3719: Dallas, Society of Petroleum Engineers. Later published in 1972, Journal of Petroleum Technology, v. 24(8), p. 929-934.
- Evers, J.F. and Ezeanyim, R., 1983, Prediction of abnormal pressures in Wyoming sedimentary basins using well logs, in Rocky Mountain regional meeting [Salt Lake City], proceedings, SPE-11859: Dallas, Society of Petroleum Engineers, p. 363-374.
- Fertl, W.H., 1977, Shale density studies and their application, <u>in</u> G.D., Hobson, ed., Developments in petroleum geology 1: London, Applied Science Publishers, p. 293-327.
- Fertl, W.H., 1976, Geophysical well-logging techniques detect and evaluate abnormal formation pressures, in Abnormal formation pressures: New York, Elsevier, chapter 5, p. 177-274.
- Hamouz, M.A. and Mueller, S.L., 1984, Some new ideas for well log pore-pressure prediction: Dallas, Society of Petroleum Engineers, 59th annual meeting (Houston) preprint SPE-13204, 11 p.
- Hottman, C.E. and Johnson, R.K., 1965, Estimation of formation pressures from log-derived shale properties: Journal of Petroleum Technology, v. 17(6), p. 717-722, SPE-1110. Reprinted in 1971, Well logging: Dallas, Society of Petroleum Engineers, Reprint Series 1, p. 299-305. One of the first papers on the use of logs for pressure detection-evaluation.
- Lane, R.A. and MacPherson, L.A., 1974, A review of geopressure evaluation from well logs--Louisiana Gulf Coast: Dallas, Society of Petroleum Engineers, 49th annual meeting (Houston) preprint SPE-5033, 16 p. Later published in 1976, Journal of Petroleum Technology, v. 28(9), p. 963-971.
- Lindberg, P.H. and Fertl, W.H., 1980, Occurrence and distribution of overpressures in the northern North Sea: Dallas, Society of Petroleum Engineers, 55th annual meeting [Dallas] preprint SPE-9339, 21 p.

- Matthews, W.R., McClendon, R.T. and Soucek, C.R., 1972, How to predict formation pressures of Cretaceous-Jurassic age sedimentsm Mississippi in 3rd symposium on abnormal subsurface pore pressure, proceedings, SPE-3895: Dallas, Society of Petroleum Engineers, p. 137-144.
- McGregor, J.R., 1965, Quantitative determination of reservoir pressures from conductivity logs: AAPG Bulletin, v. 49(9), p. 1502-1511. Reprinted in 1974, Abnormal subsurface pressure: Tulsa, American Association of Petroleum Geologists, Reprint Series 11, p. 37-46. One of the first papers on pressure detection using well logs.
- Pennebaker, E.S., 1968, An engineering interpretation of seismic data: Dallas, Society of Petroleum Engineers, 43rd annual meeting [Houston] preprint SPE-2165, 12 p. Important uses and interpretations from sonic log data.
- Pickering, L.A. and Indelicato, G.J., 1985, Abnormal formation pressure—A review: The Mountain Geologist, v. 22(2), April, p. 78-89.
- Pritchett, W.C., 1978, Physical properties of shales and possible origins of high pressures: Dallas, Society of Petroleum Engineers, 53rd annual meeting (Houston) preprint SPE-7506. Later published in 1980, Society of Petroleum Engineers Journal v. 20(5) p. 341-348.
- Rathbun, F.C., 1968, Abnormal pressures and conductivity anomaly, northern Green River basin, Wyoming: Dallas, Society of Petroleum Engineers, 43rd annual meeting (Houston) preprint SPE-2205, 8 p. Later reprinted under Rathbun, F.C. and Dickey, P., 1969, The Log Analyst, v. 10(4), July-August, p. 3-8.
- Reynolds, E.B., Timko, D.J., Zanier, A.M., 1972, Potential hazards of acoustic-log shale pressure plots: Dallas, Society of Petroleum Engineers, 47th annual meeting (San Antonio) preprint, SPE-4020. Later published in 1973, Journal of Petroleum Geology, v. 25(9), p. 1039-1044.
- Society of Petroleum Engineers, 1972, Transactions 3rd symposium on abnormal subsurface pore pressure: Dallas, Society of Petroleum Engineers, 159 p. Includes preprints of 16 papers.
- Taneja, P.K. and Carroll, J.F., 1985, Abnormal pressure detection using a pulsed neutron log in 26th annual well logging symposium transactions, paper MM: Houston, Society of Professional Well Log Analysts, 10 p.
- Timko, D.J. and Fons, L.C, 1971, Definition, identification and measurement of normal and abnormal subsurface pressures, in Abnormal subsurface pressures, a study group report, 1969-1971: Houston Geological Society, p. 20-30.
- Wallace, W.E., 1965, Abnormal subsurface pressures measured from conductivity or resistivity logs, in 6th annual logging symposium, paper I: Houston, Society of Professional Well Log Analysts, 13 p. Also published in 1965, The Log Analyst, v. 5(4), February-March, p. 26-38. and in 1965, Oil and Gas Journal, v. 63, July 5, p. 102-106. One of the first papers on use of logs for pressure detection.

- Whittaker, A., ed., 1985, Theory and evaluation of formation pressures, a pressure detection reference handbook: Boston, International Human Resources Development Corporation, 92 p.
- Wichmann, P.A., 1973, A review of the use of logs to determine abnormal pressures: Canadian Well Logging Society Journal, v. 6(1), December, p. 7-32. Later published in 1974, in 15th annual logging symposium transactions, paper C: Houston, Society of Professional Well Log Analysts, 16 p.

Well Log Analysts, 20 p.

techniques, in F.F. Yan, ed., Oil shale: New York, Elsevier Scientific Publishing Company, chapter 10, p. 199-213.

Flower, J.G., 1981. Use of somic-chear-wave/resistivity overlay as a quick-loo method for identifying potential pay zones in the Ohio (Devanian) Shele:
Dallas, Society of Petroleum Engineers, Eastern regional mesting preprint SEE-10366. Later published in 1983, Journal of Petroleum Technology, v.

Habiger, R. and Rebinson, R.E., 1983, Using a multiple log approach to evaluate Green River oil shale in the Picuance Creek hasin, in J.H. Gary, ed., 16th oil shale symposium, proceedings: Golden Co., Colorado School of Mines.

Bashmy, K.B., Hefter, T. and Chicko, R., 1982, Quantitative log evaluation in the Devention shales of the northeast United States, in 1982 SPE/DOE unconventional gas recovery symposium proceedings, SPE/DOE-10/95: Dellin,

Hilton, J., 1978, Wireline evaluation of the Devonian shale, in U.L. Schoft, W.K. Overbey, Jr., A.S. Hunt, C.A. Komar, eds., let eastern toe shales symposium, proceedings: Horganium, West Virginia, U.S. Department of

Lawrence, T.D., Sail, S., Harris, M., 1984, Continuous carbon/easyon and neutron lifetime log proposed interpretation for organic and/or shaly depositional environments, in 75th annual logging symposium transactions

Hyung, J.I., 1976, Fracture investigation of the Devoniae shale using geophysical well logging techniques: Dallas, Society of Petroleum Ingineers, Rastern region annual meeting preprint SPE-6366, 16 p. Alag published in 1976 in R.C. Shomaker and W.K. Overbey, Jr., eds., 7th Appalachies patroleum gaslogy symposium, proceedings: Margantons, West Virginia, U.S. Department of Energy Report MRRC/SP-76/2, p. 212-238, alag published by West Virginia Gerbonical and Economic Torons.

12. OIL AND GAS SHALES (See also 15. Fracture detection)

- Aguilera, R., 1980, Fractured shales, <u>in</u> Naturally fractured reservoirs: Tulsa, Petroleum Publishing Company, chapter 5, p. 355-414.
- Bardsley, S.R. and Algermissen, S.T., 1963, Evaluating oil shale by log analysis: Journal of Petroleum Technology, v. 15(1), p. 81-84. Later published in 1963, Colorado School of Mines Quarterly, v. 58(4), p. 175-184.
- Curtis, J.B. and Fingleton, W.G., 1979, A preliminary evaluation of various log analysis techniques for the eastern Devonian shales, <u>in</u> 20th annual logging symposium transactions, paper I: Houston, Society of Professional Well Log Analysts, 20 p.
- Fertl, W.H., 1976, Evaluation of oil shales using geophysical well-logging techniques, in F.F. Yen, ed., Oil shale: New York, Elsevier Scientific Publishing Company, chapter 10, p. 199-213.
- Flower, J.G., 1981, Use of sonic-shear-wave/resistivity overlay as a quick-look method for identifying potential pay zones in the Ohio (Devonian) Shale: Dallas, Society of Petroleum Engineers, Eastern regional meeting preprint SPE-10366. Later published in 1983, Journal of Petroleum Technology, v. 35(3), p. 638-642.
- Habiger, R. and Robinson, R.H., 1983, Using a multiple log approach to evaluate Green River oil shale in the Piceance Creek Basin, <u>in</u> J.H. Gary, ed., 16th oil shale symposium, proceedings: Golden Co., Colorado School of Mines, p. 45-67.
- Hashmy, K.H., Hefter, T. and Chicko, R., 1982, Quantitative log evaluation in the Devonian shales of the northeast United States, <u>in</u> 1982 SPE/DOE unconventional gas recovery symposium proceedings, SPE/DOE-10795: Dallas, Society of Petroleum Engineers, p. 55-66.
- Hilton, J., 1978, Wireline evaluation of the Devonian shale, in G.L. Schott, W.K. Overbey, Jr., A.E. Hunt, C.A. Komar, eds., 1st eastern gas shales symposium, proceedings: Morgantown, West Virginia, U.S. Department of Energy Report MERC/SP-77/5, p. 68-79.
- Lawrence, T.D., Ball, S., Harris, M., 1984, Continuous carbon/oxygen and neutron lifetime log proposed interpretation for organic and/or shaly depositional environments, in 25th annual logging symposium transactions, paper QQ: Houston, Society of Professional Well Log Analysts, 19 p.
- Myung, J.I., 1976, Fracture investigation of the Devonian shale using geophysical well logging techniques: Dallas, Society of Petroleum Engineers, Eastern region annual meeting preprint SPE-6366, 16 p. Also published in 1976 in R.C. Shumaker and W.K. Overbey, Jr., eds., 7th Appalachian petroleum geology symposium, proceedings: Morgantown, West Virginia, U.S. Department of Energy Report MERC/SP-76/2, p. 212-238, also published by West Virginia Geological and Economic Survey, p. 1-29.

- Russell, D.J., 1985, Depositional analysis of a black shale by using gamma-ray stratigraphy--The Upper Devonian Kettle Point Formation of Ontario: Bulletin of Canadian Petroleum Geology, v. 33(2), June, p. 236-253.
- Smith, J.W., Thomas, H.E. and Trudell, L.G., 1968, Geologic factors affecting density logs in oil shale, in 9th annual logging symposium transactions, paper P: Houston, Society of Professional Well Log Analysts, 17 p. Reprinted in 1978, Gamma Ray, Neutron and Density Logging: Houston, Society of Professional Well Log Analysts, Reprint volume, paper CC, 17 p.
- Tixier, M.P. and Curtis, M.R., 1967, Oil shale yield predicted from well logs, in 7th world petroleum congress, proceedings, volume 3: New York, Elsevier, p. 713-715.
- Truman, R.B. and Campbell, R.L., Jr., 1985, Devonian shale well log analysis: Eastern Devonian Gas Shales Technology Review [Gas Research Institute], v. 2(3), December, p. 6-17.
- Yost, A.B., II, Frohne, K., Komar, C.A. and Ameri, S., 1980, Techniques to determine natural and induced fracture relationships in Devonian shale: Dallas, Society of Petroleum Engineers, 55nd annual meeting [Dallas] preprint SPE-9271. Later published in 1982, Journal of Petroleum Technology, v. 34(6), p. 1371-1377.
- Yost, A.B., II, Komar, C.A. and Ameri, S., 1980, Application of core and log data to determine producible hydrocarbon intervals in the Devonian shale: Dallas, Society of Petroleum Engineers, 55th annual meeting [Dallas] preprint SPE-9271, 8 p.

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13. HEAVY OIL AND TAR SANDS

- Brown, J.S., 1965, Formation evaluation in heavy oil sands: Journal of Petroleum Technology, v. 4(4), p. 177. Later published in 1966, in 7th annual logging symposium transactions, paper B: Houston, Society of Professional Well Log Analysts, 14 p.
- Carrigy, M.A., 1971, Deltaic sedimentation in Athabasca tar sands: AAPG Bulletin, v. 55(8), p. 1155-1169.
- Chestnut, D.A. and Cox, D.O., 1978, Log analysis in a Rocky Mountain heavy oil reservoir, in 19th annual logging symposium transactions, paper F:
 Houston, Society of Professional Well Log Analysts, 15 p.
- Collins, H.N., 1974, Log-core correlations in the Athabasca oil sands: Dallas, Society Petroleum Engineers, 49th annual meeting (Houston) preprint SPE-5037, 17 p. Later published in 1976, Journal of Petroleum Technology, v.28(10), p. 1157-1168.
- Cossette, B.B., 1981, Well log analysis in heavy oil sands, <u>in</u> 8th formation evaluation symposium transactions, paper K: Calgary, Canadian Well Logging Society 18 p.
- Fertl, W.H., 1984, Recent advances in the evaluation of heavy oil reservoirs based on geophysical well-logging concepts, in R.F. Meyer, J.C. Wynn and J.C. Olson, eds., The future of heavy crude and tar sands [2nd international UNITAR conference proceedings, 1982]: New York, Coal Age Mineral Information Service, McGraw-Hill Inc., p. 313-317.
- Fertl, W.H., 1981, Evaluation of heavy oil and tar sands deposits using geophysical well logging techniques in open and cased boreholes, in R.F. Meyer, C.T. Steele and J.C. Olson, eds., Heavy crude oils and tar sands [1st international UNITAR conference proceedings, 1979]: New York, Mineral Information Service, McGraw-Hill, Inc., p. 283-294.
- Fertl, W.H. and Chilingarian, G.V., 1978, Formation evaluation of tar sands using geophysical well-logging techniques, in G.V. Chilingarian and T.F. Yen, eds., Bitumens, asphalts and tar sands: New York, Elsevier, Developments in Petroleum Science 7, Chapter 11, p. 259-276.
- Fertl, W.H. and Elliott, D.B., 1984, Well log assisted evaluation of heavy oil resources—A status report, in AAPG research conference on exploration for heavy crude oil and bitumen, proceedings, volume 1: Tulsa, American Association of Petroleum Geologists, 28 p.
- Fetzner, R.W., Henson, W.L. and Feigl, F.J., 1966, Athabasca oil sand evaluation using core and log analysis and geological data processing methods, in 7th annual logging symposium transactions, paper A: Houston, Society of Professional Well Log Analysts, 13 p.
- Flach, P.D. and Mossop, G.D., 1985, Depositional environments of Lower Cretaceous McMurray Formation, Athabasca oil sands, Alberta: AAPG Bulletin, v. 69(8), p. 11195-1207.

- Freedman, R. and Studlick, J.R.J., 1981, Evaluation of a heavy oil prospect Bandera Tank area Maverick and Zavala Counties, Texas, in 22nd annual logging symposium transactions, paper Y: Houston, Society of Professional Well Log Analysts, 39 p. Later published in 1981, Oil and Gas Journal, v. 79,(48), November 30, p. 63-76.
- Laramie Energy Research Center, 1981, A bibliography of publications dealing with tar sands: U.S. Department of Commerce, National Technical Information Service, Report DOE/LETC/RI-81-2 (DE81-026146), 294 p.
- Mraz, T.J., Rajeshwar, K. and Dubow, J.B., 1982, Thermophysical characterization of oil sands, part 2, acoustic properties: Fuel, v. 61(3), p. 240-244.
- Nelson, H.W. and Glaister, R. P., 1978, Subsurface environmental facies and reservoir relationships of the McMurray oil sands, northeastern Alberta: Bulletin of Canadian Petroleum Geology, v. 26(2), June, p. 177-207.
- Pilman, D., 1985, Petrophysical evaluation of the Orinoco heavy oil belt,
 Hamaca-Pao area Venezuela, in 3rd international UNITAR/UNDP heavy oil
 crude and tar sands conference '[Long Beach, California, July 22-31, 1985),
 preprints: New York, United Nations Institute for Training and Research,
 Information Center for Heavy Crude and Tars, 29 p.
- Pirie, G., 1985, Geology of a single well (Maraven SDZ-86X) from cores and logs, Orinoco heavy oil belt, Venezuela, in 3rd international UNITAR/UNDP heavy oil crude and tar sands conference [Long Beach, California, July 22-31, 1985), preprints: New York, United Nations Institute for Training and Research, Information Center for Heavy Crude and Tars, 54 p.
- Putnam, P.E., 1982, Aspects of the petroleum geology of the Lloydminster heavy oil fields, Alberta and Saskatchewan: Bulletin of Canadian Petroleum Geology, v. 30(2), June, p. 81-111.
- Roux, C., Fertl, W.H., Frost, E., Stedman, D., Elliott, D., 1981, Well logs evaluate and monitor heavy oil steam flood in Kern County, California, in 22nd annual logging symposium transactions, paper II: Houston, Society of Professional Well Log Analysts, 17 p.
- Sah, R.C., Chase, A.E. and Wells, L.E., 1974, Evaluation of the Alberta tar sands: Dallas, Society of Petroleum Engineers, 49th annual meeting (Houston) preprint SPE-5034, 15 p.
- Vogel, A.W., Jr., 1982, Predicting possibility of oil production from tar sand deposits based on geologic, logging and chemical composition: Dallas, Society of Petroleum Engineers, Rocky Mountain regional meeting (Billings) preprint SPE-10884, 15 p.
- Woodhouse, R., 1976, Athabasca tar sand reservoir properties derived from cores and logs: Canadian Well Logging Society Journal, v. 9(1), p. 83. Also published in 1976, in 17th annual logging symposium transactions, paper T: Houston, Society of Professional Well Log Analysts, 13 p.

14. COAL AND COALBED METHANE

- Agostini, A., 1977, Correlation of high resolution density log counts and ash content of coal: Australian Society of Exploration Geophysicists Bulletin, v. 8(2), p. 26-31.
- Asten, M.W., 1983, Borehole log analysis using an interactive computer:
 Australian Society of Exploration Geophysicists Bulletin, v. 14, p. 3-10.
 Discussion of computer-assisted estimation of lithological and geotechnical parameters.
- Bond, L.O., Alger, R.P. and Schmidt, A.W., 1971, Well log applications in coal mining and rock mechanics: Transactions of the Society of Mining Engineers AIME, v. 250, December, p. 355-362.
- Borsaru, M., Ceravolo, C., Charbucinski, J., Eisler, P. and Youl, S., 1985, Ash determination of black coal in exploration boreholes by neutron-gamma, in P. Kileen, ed., Borehole geophysics for mining and geotechnical applications [International symposium and workshop, Ottawa, August 29-31, 1983, proceedings]: Geological Survey of Canada, Paper 85-27. Available in early 1986
- Brom, R.W.C. and Driedonks, F., 1981, Applications of petrophysical logging in the evaluation of coal deposits, <u>in</u> 22nd annual logging symposium transactions, paper KK: Houston, Society of Professional Well Log Analysts, 29 p.
- Clayton, C.G., 1977, Applications of nuclear techniques in the coal industry, in Symposium on nuclear techniques in exploration, extraction and processing of mineral resources, 1977, proceedings: Vienna, International Atomic Energy Agency, p. 85-117.
- Daniels, J.J. and Scott, J.H., 1982, Automated lithologic interpretation from geophysical well logs in a coal depositional environment, Carbon County, Wyoming, in K.D., Gurgel, ed., 5th Rocky Mountain coal symposium, proceedings: Utah Geological and Mineral Survey Bulletin 118, p. 220-232.
- Daniels, J.J. and Scott, J.H., 1980, Computer-assisted interpretation of geophysical well logs in a coal depositional envrionment, Illinois Basin, Kentucky: U.S. Geological Survey, Bulletin 1509, 44 p.
- Daniels, J.J., Scott, J.H. and Liu, J, 1983, Estimation of coal quality parameters from geophysical well logs, <u>in</u> 24th annual logging symposium transactions, paper KK: Houston, Society of Professional Well Log Analysts, 20 p.
- Davis, D., 1977, Geophysical logging of coal, <u>in</u> D.K. Murray, ed., Geology of Rocky Mountain coal: Colorado Geological Survey, Resource Series 1, p. 115-119.

- Dyck, J.H. and McKenzie, C.T., 1979, Estimating certain analytical properties of lignite in Saskatchewan from gamma-gamma borehole density logs, in 7th formation evaluation symposium transactions, paper Z: Calgary, Canadian Well Logging Society, 16 p.
- Edwards, K.W. and Banks, K.M., 1978, A theoretical approach to the evaluation of in-situ coal: Canadian Institute of Mining and Metallurgy Bulletin, v. 71(792), p. 124-131.
- Ferm, J.C., 1984, Geology of coal, <u>in</u> C.R. Ward, ed., Coal geology and coal technology: Boston, Blackwell Scientific Publishers, chapter 5, p. 151-176.:
- Fertl, W.H. and DeVries, M.R., 1977, Coal evaluation using geophysical well logs, in 6th formation evaluation symposium transactions, paper F: Calgary, Canadian Well Logging Society, 17 p.
- Fishel, K.W. and Mayer, R., Jr., 1979, Extremely high resolution density coal logging techniques, in G.O. Argall, Jr., eds., Coal exploration 2 [Proceedings of 2nd international coal exploration symposium, Denver, 1978]: Miller Freeman Publications Inc., p. 490-504.
- Hoffman, G.L., Jordan, G.R. and Wallis, G.R., 1982, Geophysical logging handbook for coal exploration: Edmonton, Alberta, Canada, The Coal Mining Research Centre, 270 p. The best single source for information on the tools, techniques and qualitative interpretation of logs for coal exploration.
- Hoffman, L.J.B., 1984, Determination of pyritic sulphur in coal using induced polarisation, <u>in</u> 25th annual logging symposium transactions, paper III: Houston, Society of Professional Well Log Analysts, 12 p.
- Kayal, J.R., 1981, In situ analysis of coal from single electrode resistance, self-potential and gamma-ray logs: Geophysical Research Bulletin, v. 19(2), p. 117-121.
- Kayal, J.R., 1981, Correlation of T-log with E-log in coal-bearing formations: Pure and Applied Geophysics, v. 119, p. 349-355.
- Kayal, J.R., 1979, Electrical and gamma-ray logging in Gondwana and Tertiary coal fields of India: Geoexploration, v. 17, p. 243-258.
- Kayal, J.R. and Christoffel, D.A., 1982, Relationship between electrical and thermal resistivities for differing grades of coal: Geophysics, v. 47(1), p. 127-129. Discussion and Reply in 1982, Geophysics, v. 47(10), p. 1461.
- Kayal, J.R. and Das, L.K., 1981, A method of estimating ash content of coal from combined resistivity and gamma-ray logs: Geoexploration, v. 19, p. 193-200.
- Kowalski, J. and Fertl, W.H., 1977, Application of geophysical well logging to coal mining operations: Energy Sources, v. 3(2), p. 133-147.

- Kowalski, J. and Holter, M.E., 1975, Coal analysis from well logs: Dallas, Scoiety of Petroleum Engineers, 50th annual meeting reprint SPE-5503. Later published in 1976, Canadian Well Logging Society Journal, v. 9(1), p. 97-113.
- Lavers, B.A. and Smits, L.J.M., 1976, Recent developments in coal petrophysics, in 17th annual logging symposium transactions, paper S: Houston, Society of Professional Well Log Analysts, 19 p. Later published in 1977, The Log Analyst, v. 18(1), January-February, p. 6-16.
- Mayer, R., Jr. and Fishel, K.W., 1979, Applications of electric logs in Applachian coal exploration, <u>in</u> 6th European logging symposium transactions, paper DD: London, Society of Professional Well Log Analysts, London Chapter, 18 p.
- McCabe, P.J., 1984, Depositional environments of coal and coal-bearing strata in R.A. Rahmani and R.M. Flores, eds., Sedimentology of coal and coal-bearing sequences: Oxford, England, Blackwell Publishers, Special Publication 7 of the International Association of Sedimentologists, p. 13-42.
- Miller, M.S. and Moore, M., 1980, Geophysical logging and exploration techniques in the Appalachian coal fields: Dallas, Society of Petroleum Engineers, 55th annual meeting (Dallas) preprint SPE-9466.
- Norris, J.O. and Thomas, R., 1980, An in situ coal quality prediction technique: Dallas, Society of Petroleum Engineers, 55th annual meeting [Dallas] preprint SPE-9467, 9 p.
- Reeves, D.K., 1979, Some improvements and developments in coal wireline logging techniques, in G.O. Argall, Jr., eds., Coal exploration 2 [Proceedings of 2nd international coal exploration symposium, Denver, 1978]: Miller Freeman Publications Inc., p. 468-489.
- Rieke, H.H., III, Oliver, D.W. and Fertl, W.H., McCord, J.P., 1980, Successful application of carbon/oxygen logging to coalbed exploration: Dallas, Society of Petroleum Engineers, 55th annual meeting (Dallas) preprint SPE-9464, 11 p. Later published in 1983, Journal of Petroleum Technology, v. 35(2), p. 421-428. Reprinted in 1981, Carbon/Oxygen Log: Houston, Dresser Industries, publication 9417.
- Rieke, H.H., Rightmire, C.T. and Fertl, W.H., 1979, Evaluation of gas bearing coal seams: Dallas, Society of Petroleum Engineers, 54th annual meeting (Las Vegas) preprint SPE-8359. Later published 1981, Journal of Petroleum Technology, v. 33(1), p. 195-204.
- Stanley, C.B. and Schultz, A.P., 1983, Coal-bed methane resource evaluation, Montgomery County, Virginia: Charlottesville, Virginia division of Mineral Resources, Publication 46, 59 p.
- Suau, J., 1981, Logging methods for coal exploration: Bulletin des Centres de Recherchese Exploration-Production Elf-Aquitain, v. 5(2), p. 621-633.

- Sumner, J.S., 1979, The induced-polarization exploration method, <u>in</u> P.J. Hood, ed., Geophysics and geochemistry in the search for metallic ores [Exploration 77, Ottawa, Canada, October 1977, proceedings]: Geological Survey of Canada, Economic Geology Report 31, p. 123-133.
- Ward, C.R., 1984, Coalfield exploration, in C.R. Ward, ed., Coal geology and coal technology: Boston, Blackwell Scientific Publishers, chapter 6, p. 177-219.
- Weltz, L.S., 1976, Log evaluation of sub-bituminous coals in Magallenes--Chile, in 17th annual logging symposium transactions, paper K: Houston, Society of Professional Well Log Analysts, 33 p.

diers, R., 1975, Analysis of naturally fractured reservoirs from conventional well logs: Dallas, Society of Patroleum Engineers, Rocky Mountain regional meeting preprint SPE-5342. Later published in 1976, Invest of Patroleum Tachanlagy v. 28(7), p. 754-772

Journal of Petroleum Technology, v. 28(7), p. 764-772. Discussion and reply published in 1976, Journal of Petroleum Technology, v. 28(10), p.

Aguilers, R., 1973; Analysis of materally fractured reservoirs from socie a

resistivity logs: Dallas, Society of Petroleum Engineers, Rocky Mountain regional meeting preprint SPC-A398, Later published in 1974, Journal of Petroleum Technology, v. 26(31), p. 1233-1238.

Aguilers, R. and Van Poolen, H.K., 1979, Perosity and water saturation can be estimated from logs: Oil and Gas Journal, v. 77, January 6, p. 101-108.

Aquilers, R. and Yau Poolen, E.K., 1978, How to evaluate naturally fractured reservoirs from various well logs: Oil and Cas Journal, v. 76, December 25, 202-205

Aguilers, E. and Van Boolon B.E., 1977, Current status on the grady of paturally fractured reservoirs: The Doc Analyst, w. 18(3) . 2-20

Babcock, S.A., 1978, Measurement of subsurface fractures from dipaster logs:

deck, Jr. Schults, A. and Fitzgerald, D., 1977; Reservoir evaluation of fractured Gretaceous carbonates in south Texas, in 18th annual logging symposium transactions, paper Mi Houston, Society of Professional Well

Sell, J.S. and Gough, D.I., 1982, The use of borahole breakours in the study trustal stress, in M.D. Loback and B.O. Hainson, eds., Vortahop on hydraulic fractoring stress measurements [December 2-5] proceedings:

U.S. Geological Survey Doen-file Report 82-1075, 6, 539-557

Alberta: evidence from oil wells: Earth and Planetary Schools Lafters, 45, p. 475-482.

15. FRACTURE DETECTION AND EVALUATION

- Aguilera, R., 1983, Exploring for naturally fractured reservoirs, in 24th annual logging symposium transactions, paper C: Houston, Society of Professional Well Log Analysts, 28 p.
- Aguilera, R., 1981, A computerized well log interpretation process for the evaluation of naturally fractured reservoirs: Calgary, Petroleum society of CIM 32nd annual technical meeting (Calgary) preprint 81-32-6, 8 p.
- Aguilera, R., 1980, Formation evaluation by well log analysis, <u>in</u> Naturally fractured reservoirs: Tulsa, Petroleum Publishing Co., chapter 3, p. 125-232. See references.
- Aguilera, R., 1975, Analysis of naturally fractured reservoirs from conventional well logs: Dallas, Society of Petroleum Engineers, Rocky Mountain regional meeting preprint SPE-5342. Later published in 1976, Journal of Petroleum Technology, v. 28(7), p. 764-772. Discussion and reply published in 1976, Journal of Petroleum Technology, v. 28(10), p. 1183-1184.
- Aguilera, R., 1973, Analysis of naturally fractured reservoirs from sonic and resistivity logs: Dallas, Society of Petroleum Engineers, Rocky Mountain regional meeting preprint SPE-4398. Later published in 1974, Journal of Petroleum Technology, v. 26(11), p. 1233-1238.
- Aguilera, R. and Van Poolen, H.K., 1979, Porosity and water saturation can be estimated from logs: Oil and Gas Journal, v. 77, January 8, p. 101-108.
- Aguilera, R. and Van Poolen, H.K., 1978, How to evaluate naturally fractured reservoirs from various well logs: Oil and Gas Journal, v. 76, December 25, p. 202-208.
- Aguilera, R. and Van Poolen H.K., 1977, Current status on the study of naturally fractured reservoirs: The Log Analyst, v. 18(3), p. 3-23.
- Babcock, E.A., 1978, Measurement of subsurface fractures from dipmeter logs: AAPG Bulletin, v. 62(7), p. 1111-1126.
- Beck, J., Schultz, A. and Fitzgerald, D., 1977, Reservoir evaluation of fractured Cretaceous carbonates in south Texas, in 18th annual logging symposium transactions, paper M: Houston, Society of Professional Well Log Analysts, 25 p.
- Bell, J.S. and Gough, D.I., 1982, The use of borehole breakouts in the study of crustal stress, in M.D. Zoback and B.C. Haimson, eds., Workshop on hydraulic fracturing stress measurements [December 2-5], proceedings: U.S. Geological Survey Open-file Report 82-1075, p. 539-557.
- Bell, J.S. and Gough, D.I., 1979, Northeast-southwest compressive stress in Alberta: evidence from oil wells: Earth and Planetary Science Letters, v. 45, p. 475-482.

- Botter, B.J., 1982, Circumferential acoustic waves in boreholes for the delineation of vertical fractures, <u>in</u> 23rd annual logging symposium, paper S: Houston, Society of Professional Well Log Analysts, 21 p.
- Boyeldieu, C. and Martin, C., 1984, Fracture dectection and evaluation, <u>in</u> 9th international formation evaluation symposium transactions, paper 21:
 Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 9
 P.
- Boyeldieu, C. and Winchester, A., 1982, Use of the Dual Laterolog for the evaluation of the fracture porosity in hard carbonate formations: Dallas, Society of Petroleum Engineers, Offshore South East Asia 82 conference preprint SPE-10464, 11 p.
- Brevetti, J.C., Greer, G. and Weis, B.R., 1985, Evaluation of fractured carbonates in the Mid-Continent region, in 26th annual logging symposium transactions, paper III: Houston, Society of Professional Well Log Analysts, 19 p.
- Butler, M. Phelan, M.J. and Wright, A.W.R., 1976, Buchan field--Evaluation of a fractured sandstone reservoir, in 4th European formation evaluation symposium transactions, paper A: London, Society of Professional Well Log Analysts, London Chapter, 18 p. Later published in 1977, The Log Analyst, v. 18(2), March-April, p. 23-31.
- Cannon, D.E., 1979, Log evaluation of a fractured reservoir--Monterey Shale, <u>in</u> 20th annual logging symposium transactions, paper Q: Houston, Society of Professional Well Log Analysts, 13 p.
- Cheung, P.S.Y., 1984, Fracture detection using the sonic tool, in 9th international formation evaluation symposium transactions, paper 42: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 8 p.
- Cox, J.W., 1983, Long axis orientation in elongated boreholes and its correlation with rock stress data, in 24th annual logging symposium transactions, paper J: Houston, Society of Professional Well Log Analysts, 17 p.
- Cox, J.W., 1970, The high resolution dipmeter reveals dip-related borehole and formation characteristics in 11th annual logging symposium transactions, paper D: Houston, Society of Professional Well Log Analysts, 26 p.
- Delhomme, J.P., Panci, G., Leslie, D., Cigni, M. and Spila, M., 1981, An integrated approach to fracture detection from multipad sensors, in 7th European logging symposium transactions, paper 26: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 17 p.
- Engelhard, L., 1985, Shear wave well logging from wavetrain analysis in G.P.
 Dohr, ed., Seismic shear waves, seismic exploration volume 15A, part
 A--Theory: London, Geophysical Press, chapter 5, p. 283-351.

- Entyre, L., 1981, Fracture detection identification in the Panoma Field,
 Council Grove Formation: The Log Analyst, v. 22(6), November-December, p. 3-6.
- Fert1, W.H., 1983, Gamma ray spectral logging, part IV--Application in fractured shales: World Oil, v. 196(7), June, p. 189-204.
- Fertl, W.H., 1980, Evaluation of fractured reservoirs using geophysical well logs, in SPE/DOE unconventional gas recovery symposium, proceedings, SPE/DOE-8938: Dallas, Society of Petroleum Engineers, p. 131-136.
- Flower, J.G., 1981, Use of sonic-shear-wave/resistivity overlay as a quick-look method for identifying potential pay zones in the Ohio (Devonian) Shale: Dallas, Society of Petroleum Engineers, eastern regional meeting preprint SPE-10366. Later published in 1983, Journal of Petroleum Technology, v. 35(3), p. 638-642.
- Garotta, R., 1985, Observation of shear waves and correlation with P events in G.P. Dohr, ed., Seismic shear waves, seismic exploration volume 15B, part B-Applications: London, Geophysical Press, chapter 1, p. 1-86. A discussion of P and S waves, their potential, and application in formation evaluation.
- Gough, D.I. and Bell, J.S., 1982, Stress orientations from borehole fractures with examples from Colorado, east Texas, and northern Canada: Canadian Journal of Earth Sciences, v. 19(7), p. 1358-1370.
- Gough, D.I. and Bell, J.S., 1981, Stess orientations from oil-well fractures in Alberta and Texas: Canadian Journal of Earth Sciences, v. 18, p. 638-645.
- Grove, G.P. and Whittaker, J.L., 1985, Continuous fracture probability determination as applied to the Monterey Formation: <u>in</u> 55th annual California regional meeting [March 27-29, Bakersfield] proceedings: Dallas, Society of Petroleum Engineers, SPE-13652, p. 591-598.
- Haimson, B.C. and Herrick, C.G., 1985, In situ stress evaluation from borehole breakouts, experimental studies, in E. Ashworth, ed., Research and engineering applications in rock masses [26th U.S. symposium on rock mechanics, South Dakota School of Mines and Technology, Rapid City, 26-28 June, proceedings]: Boston, A.A. Balkema, volume 2, p. 1207-1218.
- Heflin, J.D., 1979, Fracture detection in West Coast reservoirs using well logs: Dallas, Society of Petroleum Engineers, California Regional meeting preprint SPE-7976, 16 p.
- Heflin, J.D. and Frost, E., Jr., 1981, Some novel approaches in the use of wireline logs for fracture detection, in 7th Europan logging symposium transactions, paper 22: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 42 p. Later published 1983, in C.M. Isaacs, R.E. Garrison, eds., Petroleum generation and occurrence in the Miocene Monterey Formation, California: Pacific Section of the Society of Economic Paleontologists and Mineralogists, p. 131-149.

- Heflin, J.D., Neill, B.E. and DeVries, M.R., 1976, Log evaluation in the California Miocene: Dallas, Society of Petroleum Engineers, 51st annual meeting (New Orleans) preprint SPE-6160, 17 p. Reprinted in 1981, Spectralog: Houston, Dresser Industries, publication 3334.
- Hickman, S.H., Healy, J.H. and Zoback, M.D., 1985, In situ stress, natural fracture distribution and borehole elongation in the Auburn geothermal well, Auburn, New York: Journal of Geophysical Research, v. 90(B7), p. 5497-5512.
- Hirsch, J.M., 1981, Recent experience with wireline fracture detection logs: Dallas, Society of Petroleum Engineers, 56th annual meeting [San Antonio] preprint SPE-10333, 10 p.
- Hsu, K, Brie, A. and Plumb, R.A., 1985, A new method for fracture identification using array sonic tools: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14397, 8 p.
- Jones, J.W., Simpson, E.S. and Neuman, S.P., 1984, Geophysical investigation of fractured crystalline rock near Oracle, Arizona, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 877-896.
- Julian, P.J., 1982, Fracture detection techniques in the Georgetown and Austin chalk formations: Dallas, Society of Petroleum Engineers, 57th annual meeting [New Orleans] preprint SPE-11035.
- Kierstein, R.A., 1984, True location and orientation of fractures logged with the acoustic televiewer (including programs to correct fracture identification): U.S. Geological survey Water-Resources Investigations Report 83-4275, 73 p.
- Kleinberg, R.L., Chow, E.Y., Plona, T.J., Orton, M. and Canady, W.J., 1982, Sensitivity and reliability of fracture detection techniques for borehole application: Dallas, Society of Petroleum Engineers, 57th annual meeting [New Orleans] preprint SPE-11036.
- Koerperich, E.A., 1977, Investigation of acoustic boundary waves and interference patterns as techniques for detecting fractures: Dallas, Society of Petroleum Engineers, 52nd annual meeting [Denver] preprint SPE-6820. Later published in 1978, Journal of Petroleum Technology, v. 30(8), p. 1199-1207.
- Levine, E.N., Cybriwsky, Z.A. and Toksoz, M.N., 1984, Detection of permeable rock fractures and estimation of hydraulic conductivity by 3-D vertical seismic profiling, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 853-876.
- Liu, O.Y., 1985, Fracture evaluation using borehole sonic velocity measurements: Dallas, Society of Petroleum Engineers, 60th annual meeting [Las Vegas], preprint SPE-14399, 8 p.

- Mathieu, F. and Toksoz, M.N., 1984, Determination of fracture permeability using acoustic logs, in 9th international formation evaluation symposium transactions, paper 47: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 39 p.
- McCoy, R.L., Kumar, R.M. and Pease, R.W., 1980, Identifying fractures with conventional well logs: World Oil, v. 191(7), December, p. 91-98.
- Mickam, J.T., Levy, B.S. and Lee, G.W., Jr., 1984, Detection of fractures and solution channels in karst terranes using natural gamma ray and hole caliper borehole logs, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 801-811.
- Minear, J.W. and Ajam, S.O., 1984, Full wave acoustic logging: some examples: 5th offshore South East Asia conference, proceedings [February 21-24, Singapore], SPE-12399, 13 p.
- Minne, J.C. and Gartner, J., 1979, Fracture detection in the Middle East, in 1979 Middle East oil technical conference, proceedings, SPE-7773: Dallas, Society of Petroleum Engineers, p. 183-190.
- Morris, R.L., Grine, D.R. and Arkfeld, T.E., 1964, Using compressional and shear acoustic amplitudes for the location of fractures: Journal of Petroleum Technology, v. 16(6), p. 623-632.
- Myung, J.I., 1976, Fracture investigation of the Devonian shale using geophysical well logging techniques: Dallas, Society of Petroleum Engineers, Eastern region annual meeting preprint SPE-6366, 16 p. Also published in 1976 in R.C. Shumaker and W.K. Overbey, Jr., eds., 7th Appalachian petroleum geology symposium, proceedings: Morgantown, West Virginia, U.S. Department of Energy Report MERC/SP-76/2, p. 212-238. Procedings also published by West Virginia Geological and Economic Survey, p. 1-29.
- Myung, J.I. and Baltosser, R.W., 1977?, Fracture evaluation by the borehole logging method: Tulsa, Birdwell Division, Seismograph Service Corporation, 28 p.
- Newmark, R.L., Anderson, R.N., Moos, D., Zoback, M.D., 1985, Sonic and ultrasonic logging of hole 504B and its implications for the structure, porosity, and stress regime of the upper 1 km of the oceanic crust, in Initial reports of the the Deep Sea Drilling Project, v. 83: Washington D.C., U.S. Government Printing Office, p. 479-510. Also published as 1985, Structure, porosity and stress regime of the upper oceanic crust--Sonic and ultrasonic logging of DSDP hole 504B, Tectonophysics, v. 118, p. 1-42.
- Newmark, R.L., Anderson, R.N., Moos, D., Zoback, M.D., 1985, Sonic and ultrasonic logging of hole 504B and its implications for the structure, porosity, and stress regime of the upper 1 km of the oceanic crust, in Initial reports of the the Deep Sea Drilling Project, v. 83: Washington D.C., U.S. Government Printing Office, p. 479-510.

- Newmark, R.L., Anderson, R.N., Moos, D., Zoback, M.D., 1985, Structure, porosity and stress regime of the upper oceanic crust--Sonic and ultrasonic logging of DSDP hole 504B: Tectonophysics, v. 118, p. 1-42.
- Paillet, F.L., 1985, Problems in fractured-reservoir evaluation and possible routes to their solution: The Log Analyst, v. 26(6), November-December, p. 26-41.
- Paillet, F.L., 1985, Applications of borehole-acoustic methods in rock mechanics, in E. Ashworth, ed., Research and engineering applications in rock masses [26th U.S. symposium on rock mechanics, South Dakota School of Mines and Technology, Rapid City, 26-28 June, proceedings]: Boston, A.A. Balkema, p. 207-220.
- Paillet, F.L., 1981, A comparison of fracture characterization techniques applied to near-vertical fractures in a limestone reservoir, in 22nd annual logging symposium transactions, paper XX: Houston, Society of Professional Well Log Analysts, 29 p.
- Paillet, F.L. and Keys, W.S., 1984, Applications of borehole geophysics in characterizing the hydrology of fractured rocks, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations [San Antonio, February 7-9], proceedings: Worthington, Ohio, National Water Well Association, p. 743-761.
- Paillet, F.L. Keys, W.S. and Hess, A.E., 1985, Effects of lithology on televiewer log quality and fracture interpretation, in 26th annual logging symposium transactions, paper JJJ: Houston, Society of Professional Well Log Analysts, 31 p.
- Paillet, F.L. and Kim, K., 1985, The character and distribution of borehole breakouts and their relationship to in situ stresses in deep Columbia River basalts: Richland, Washington, Rockwell Hanford Operations Report RHO-BW-CR-155, December, 27 p. Aslo submitted to Geophysics.
- Plumb, R.A. and Hickman, S.H., 1985, Stress-induced borehole elongation—A comparison between the four-arm dipmeter and the borehole televiewer in the Auburn geothermal well: Journal of Geophysical Research, v. 90(B7), p. 5513-5521.
- Rasmus, J.C., 1981, Determining the type of fluid contained in the fractures of the Twin Creek limestone by using the Dual Laterolog tool, <u>in</u> 1981 SPE/DOE low-permeability symposium [Denver], proceedings SPE-9857: Dallas, Society of Petroleum Engineers, p. Later published in 1982, Journal of Petroleum Technology, v. 34(11), p. 2673-2682.
- Rigby, F.A., 1980, Fracture identification in an igneous geothermal reservoir, Surprise Valley, California, in 21st annual logging symposium transactions, paper Z: Houston, Society of Professional Well Log Analysts, 9 p. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. VII-111-VII-119.

- Schafer, J.N., 1979, A practical method of well evaluation and acreage development for the naturally fractured Austin Chalk Formation, in 20th annual logging symposium transactions, paper U: Houston, Society of Professional Well Log Analysts, 27 p. Later published in 1980, The Log Analyst, v. 21(1), January-February, p. 10-23.
- Senecal, J.E., and Mulhern, M.E., 1985, Monterey Formation analysis--State-of-the-art interpretation of lithology, fractures and fluid identification in fine-grained mineralogically variable rocks, in 26th annual logging symposium transactions, paper KKK: Houston, Society of Professional Well Log Analysts, 16 p.
- Setser, G.G., 1981, Fracture detection by circumferential propagation of acoustic energy: Dallas, Society of Petroleum Engineers, 56nd annual meeting [San Antonio] preprint SPE-10204, 8 p.
- Shanks, T.R., Kwon, B.S., DeVries, M.R. and Wichmann, P.A., 1976, A review of fracture detection with well logs: Dallas, Society of Petroleum Engineers, 51nd annual meeting [New Orleans] preprint SPE-6159, 17 p.
- Sibbit, A. and Faivre, O., 1985, The Dual Laterolog response in fractured rocks, in 26th annual logging symposium transactions, paper T: Houston, Society of Professional Well Log Analysts, 34 p.
- Stephen, R.A., Cardo-Casa, F. and Cheng, C.H., 1985, Finite-difference synthetic acoustic logs: Geophysics, v. 50(10), p. 1588-1609.
- Stewart, G., Wittman, M.J., and van Golf-Racht, T., 1981, The application of the repeat formation tester to the analysis of naturally fractured reservoirs: Dallas, Society of Petroleum Engineers, 56th annual meeting [San Antonio] preprint SPE-10181, 19 p.
- Suau, J. and Gartner, J., 1980, Fracture detection from well logs: The Log Analyst, v. 21(2), March-April, p. 3-13.
- Tatham, R.H., 1985, Shear waves and lithology in G.P. Dohr, ed., Seismic shear waves, seismic exploration volume 15B, part B--Applications: London, Geophysical Press, chapter 2, p. 87-133.
- Taylor, T.J., 1983, Interpretation and application of borehole televiewer surveys, in 24th annual logging symposium transactions, paper QQ: Houston, Society of Professional Well Log Analysts, 19 p.
- Teufel, L.W., 1985, Insights into the relationship between wellbore breakouts, natural fractures, and in situ stress, in E. Ashworth, ed., Research and engineering applications in rock masses [26th U.S. symposium on rock mechanics, South Dakota School of Mines and Technology, Rapid City, 26-28 June, proceedings]: Boston, A.A. Balkema, volume 2, p. 1199-1206.
- Van Golf-Racht, T.D., 1982, Logging versus fracture evaluation <u>in</u> Fundamentals of fractured reservoir engineering: Amsterdam, Elsevier, Developments in pertroleum science, 12, Chapter 5, p. 255-294.

- White, J.E., 1983, Waves along cyclindrical boreholes, in Underground sound, application of seismic waves: Amsterdam, Elsevier, Methods in geochemistry and geophysics 18, Chapter 5, p. 139-245.
- Williams, J.H., Carswell, L.D., Lloyd, O.B., Jr., and Roth, W.C., 1984, Characterization of ground water circulation in selected fractured rock aquifers using borehole temperature and flow logs, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 842-852.
- Yamaguchi, S. and Hirakawa, S., 1983, A method for well log interpretation of a fractured oil reservoir: Butsuri-Tanko [Geophysical Exploration], v. 36(1), p. 16-22 p.
- Zemanek, J., Caldwell, R.L., Glenn, E.E., Jr., Holcaomb, S.W., Norton, L.J. and Straus, A.J.D., 1968, The Borehole Televiewer—A new logging concept for fracture location and other types of borehole inspection: Dallas, Society of Petroleum Engineers, 43rd Annual Meeting (Houston) preprint SPE-2402. Later published in 1969, Journal of Petroleum Technology, v. 21(6), p. 762-774.
- Zoback, M.D., Moos, D., Mastin, L., and Anderson, R.N., 1985, Well bore breakouts and in situ stress: Journal of Geophysical Research, v. 90(B7), p. 5523-5530.

Follard, D.E. and Rest. M.G., 1971, Observations on paraelros, logging in the

Interpretation of geophysical well logo in permatrum: Falchacks, Algers,

16. PERMAFROST AND GAS HYDRATES

- Collett, T.S. and Ehlig-Economides, C.A., 1983, Detection and evaluation of the in-situ natural gas hydrates in the north slope region, <u>in</u> 53rd annual California regional meeting, proceedings, SPE-11673: Dallas, Society of Petroleum Engineers p. 97-106.
- Collett, T.S. and Godbole, S.P. and Ehlig-Economides, C., 1984, Quantification of in-situ gas hydrates with well logs, <u>in</u> 35th annual meeting transactions, v. 2: Calgary, Petroleum Society of CIM and Canadian Association of Drilling Engineers, p. 571-582.
- Desai, K.P. and Morre, E.J., 1967, Well log interpretation in permafrost, <u>in</u> 8th annual logging symposium transactions, paper N: Houston, Society of Professional Well Log Analysts, 27 p.
- Goodman, M.A. and Giussani, A.P. and Alger, R.P., 1982, Detection and evaluation methods for in-situ gas hydrates, <u>in</u> SPE/DOE unonventional gas recovery symposium, proceedings, SPE/DOE-10831: Dallas, Society of Petroleum Engineers, p. 355-371.
- Hoyer, W.A., Simmons, S.O., Spann, M.M. and Watson, A.T., 1975, Evaluation of permafrost with logs, in 16th annual logging symposium transactions, paper AA: Houston, Society of Professional Well Log Analysts, 15 p.
- Hunter, J.A., 1975, Borehole geophysical methods in permafrost, <u>in</u> A.V. Dyck, ed., Borehole geophysics applied to metallic mineral prospecting—A review: Geological Survey of Canada, Paper 75-31, p. 67.
- Katz, D.L., 1970, Depths to which frozen gas fields (gas hydrates) may be expected: Dallas, Society of Petroleum Engineers, 45th annual meeting (Houston) preprint SPE-3061. Later published in 1971, Journal of Petroleum Technology, v. 23(4), p. 419-423.
- Kiefte, H., Clouter, M.J., Gagnon, R.E., 1985, Determination of acoustic velocities of clathrate hydrates by Brillouin spectroscopy: Journal of Physical Chemistry, v. 89, p. 3103-3108.
- Pearson, C.F., Halleck, P.M., McGuire, P.L., Hermes, R. and Mathews, M., 1983, Natural gas hydrate deposits—A review of in-situ properties: Journal of Physical Chemistry, v. 87, p. 4180-4185.
- Pollard, D.E. and Nash, R.G., 1971, Observations on permafrost logging in the Canadian Arctic: Canadian Well Logging Society Journal, v. 4(1), p. 37-84.
- Scott, J.H., Petersen, J.K., Osterkamp, T.E., and Kawasaki, K., 1985, Interpretation of geophysical well logs in permafrost: Fairbanks, Alaska, University of Alaska Geophysical Institute, report UAG-R(303) (Prepared for U.S. Department of Energy, Morgantown Energy Technology Center, contract DE-AI19-83 BC 10810), 125 p.

- Snegirev, A.M., 1984, Resistivity logging of frozen rocks, in Permafrost 4th international conference [Fairbanks, Alaska, July 17-22, 1983], proceedings: Washington, D.C., National Academy Press, p. 295-299.
- Stewart, J.M. and Weaver, J.S., 1983, Permafrost and hydrates under the Beaufort Sea, in 24th annual logging symposium transactions, paper K: Houston, Society of Professional Well Log Analysts, 18 p.
- Walker, J.H.D. and Stuart, A.J., 1976, Permafrost investigations by crystal cable surveys, McKenzie Delta, N.W.T., in 17th annual logging convention transactions, paper J: Houston, Society of Professional Well Log Analysts, 10 p.

37: Peris, Society of Professional Wall the Analysis Teris Chapter

B.C. Schreiber, eds., Marine evaporities, Colos, Seepes of Economic Paleontologists and Mineralegists, Paper Course Notes St. N. p. 144-175.

17. EVAPORITES

- Alger, R.P. and Crain, E.R., 1966, Defining evaporite deposits with electrical well logs, in J.L. Rau, eds., Second symposium on salt, volume 2: Cleveland, Northern Ohio Geological Society, p. 116-130.
- Bidgood, D.E.T. and Blanchard, J.E., 1970, Geophysical investigations of evaporites in Nova Scotia, in L.W. Morely, ed., Mining and groundwater geophysics--1967: Geological Survey of Canada Economic Report 26, p. 497-503.
- Costello, J.T. and Norquay, I.P., 1970, Logging the Prairie evaporite formation in Saskatchawan, in L.W. Morely, ed., Mining and groundwater geophysics--1967: Geological Survey of Canada Economic Report 26, p. 492-496.
- Crain, E.R. and Anderson, W.B., 1966, Quantitative log evaluation of the Prairie Evaporite Formation in Saskatchewan: Canadian Journal of Petroleum Technology, v. 5(3), p. 145-152.
- Crues, J.V., Jr., 1977, Lithology crossplots—Applications in an evaporite basin—the Maverick basin of southwest Texas, <u>in</u> 18th annual logging symposium transactions, paper L: Houston, Society of Professional Well Log Analysts, 23 p.
- Daniels, J.J., Scott, J.H. and Hite, R.J., 1979, Analysis of borehole geophysical data in an evaporite sequence at Salt Valley, Utah, in 20th annual logging symposium transactions, paper M: Houston, Society of Professional Well Log Analysts, 19 p.
- Edwards, J.M., Ottinger, N.H. and Haskell, R.E., 1967, Nuclear log evaluation of potash deposit, <u>in</u> 8th annual logging symposium transactions, paper L: Houston, Society of Professional Well Log Analysts, 12 p.
- Goldsmith, L.H., 1966, Some fundamentals of potash geology as a guide to exloration, in 7th annual logging symposium transactions, paper 0: Houston, Society of Professional Well Log Analysts, 15 p.
- Haile, P.M. and Blunden, H.A., 1984, Zechstein magnesium rich evaporite deposits of northern Netherlands and their volumetric analysis by GLOBAL, in 9th international formation evaluation symposium transactions, paper 37: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 9 p.
- Nurmi, R.D., 1978, Use of well logs in evaporite sequences, <u>in</u> W.E. Dean and B.C. Schreiber, eds., Marine evaporites: Tulsa, Society of Economic Paleontologists and Mineralogists, Short Course Notes No. 4, p. 144-176.
- Ramondetta, P.J. and Merritt, R.M., 1982, Use of geophysical well logs for the determination of mud and anyhdrite content in bedded salt, in Geology and geohydrology of the Palo Duro Basin, Texas panhandle: Texas Bureau of Economic Geology, Circular 82-7, p. 105-108.

- Ruppel S.C. and Ramondetta, P.J., 1982, Determination of salt purity using gamma-ray logs--San Andres Formation, Palo Duro Basin, in Geology and geohydrology of the Palo Duro Basin, Texas panhandle: Texas Bureau of Economic Geology, Circular 82-7, p. 183-200.
- Serra, O. and Curial, A., 1985, Recent progress in evaporite recognition through well logs: Bulletin Societe Geologique de France, v. 8(6), p. 797-806 [in French]. The use of newer logging tools and computer software for evaporite recognition.

Bradley, J.W., 1975, Application of the borehola gravimeter to the evaluation and exploration of oil and gas reserves: Tutat, Society of Exploration

Geophysicists, with sudual masting (Denver) preprint, 10 p.

borehole gravimeter survey: Geophysics, v. 47(1), p. 25-30.

data - Applications and analyses of reduced gravity plots, in 22nd annual lugging symposium transactions; pager RR: Bouston, Society of

lugging symposium transactions, pager ER: Souston, Society of Professional Well Log Analysts, 41 p.

Edcon, Inc., no date, Porchole gravity density logging: Denver, Edcon, Inc.,

Sourcey, L.S. and Lyle, W.D., 1984, Determination of hydrocarbon esteration and porosity using a combination borehole gravinator and deep investigating

electric log, in 25th angual logging symposium transactions ... yaper MW: Houston, Society of Professional Well Log Analysis, 14 p.

Sournay, L.S. and Haute, R.E., 1982, Detection of bypassed one neing borehold gravimeter and pulsed neutron capture logs: The log analyst, v. 23(3), New-June, p. 27-32.

Hearst, J.R., 1977, Estimation of hip and lateral extent of bads with boretole gravinatry: Gapphysics, v. 41, p. 980-994.

Rearst, J.R., 1977, On the range of investigation of a horabole gravitator, in 18th annual logging symposium transactions, separ E: Housepe, Society of

Hearst, J.R. and Carlson, R.G., 1982, Herselemant destactively of gravity in boreholes, in A.A. Fitch, ed., Developments to proposition

Reseat, J.R. and McKague, B.L., 1976, Streeture giutifation with horshole

Jageler, A.H., 1975, Improved byrocorbon reservoir contention abrough use of borehole gravimater data: Dellas, Society of Petroleum Engineers, 50th annual meeting (Dallas) propriat SFE-5511, 20 m. Lettr published in 1976
Journal of Petroleum Technology, v. 28(A) m. 200-312

18. BOREHOLE GRAVIMETRY

- Beyer, L.A., 1983, Borehole gravity surveys--Theory, mechanics and nature of measurements: U.S. Geological Survey, Open-File Report 83-0079, 91 p.
- Black, A.J. and Herring, A.T., 1983, Offset of borehole gravity densities due to geologic structures: Calgary, Canadian Society of Exploration Geophysicists, annual meeting preprint, 33 p. Available from Edcon, Inc., Denver, Colorado.
- Bradley, J.W., 1975, Application of the borehole gravimeter to the evaluation and exploration of oil and gas reserves: Tulsa, Society of Exploration Geophysicists, 45th annual meeting (Denver) preprint, 15 p.
- Brown , A.R. and Lautzenhiser, T.V., 1982, The effect of dipping beds on a borehole gravimeter survey: Geophysics, v. 47(1), p. 25-30.
- Caton, P.W., 1981, Improved methods for reducing borehole-gravity data--Applications and analyses of reduced gravity plots, <u>in</u> 22nd annual logging symposium transactions; paper RR: Houston, Society of Professional Well Log Analysts, 41 p.
- Edcon, Inc., no date, Borehole gravity density logging: Denver, Edcon, Inc., 30 p.
- Gournay, L.S. and Lyle, W.D., 1984, Determination of hydrocarbon saturation and porosity using a combination borehole gravimeter and deep investigating electric log, in 25th annual logging symposium transactions, paper WW:

 Houston, Society of Professional Well Log Analysts, 14 p.
- Gournay, L.S. and Maute, R.E., 1982, Detection of bypassed gas using borehole gravimeter and pulsed neutron capture logs: The Log Analyst, v. 23(3), May-June, p. 27-32.
- Hearst, J.R., 1977, Estimation of dip and lateral extent of beds with borehole gravimetry: Geophysics, v. 42, p. 990-994.
- Hearst, J.R., 1977, On the range of investigation of a borehole gravimeter, in 18th annual logging symposium transactions, paper E: Houston, Society of Professional Well Log Analysts, 11 p.
- Hearst, J.R. and Carlson, R.C., 1982, Measurement and analysis of gravity in boreholes, in A.A. Fitch, ed., Developments in geophysical exploration methods 3: London, Applied Science Publishers, p. 269-303.
- Hearst, J.R. and McKague, H.L., 1976, Structure elucidation with borehole gravimetry: Geophysics, v. 41(3), p. 491-505.
- Jageler, A.H., 1975, Improved hyrocarbon reservoir evaluation through use of borehole gravimeter data: Dallas, Society of Petroleum Engineers, 50th annual meeting (Dallas) preprint SPE-5511, 20 p. Later published in 1976, Journal of Petroleum Technology, v. 28(6), p. 709-718.

- Jones, B.R., 1972, The use of downhole gravity data in formation evaluation, in 13th annual logging symposium transactions, paper M: Houston, Society of Professional Well Log Analysts, 13 p.
- LaFehr, T.R., 1983, Rock density from borehole gravity surveys: Geophysics, v. 48(3), p. 341-356.
- Maute, R.E. and Gournay, L.S., 1985, Determination of residual oil saturation with the borehole gavity meter, <u>in</u> 4th Middle East oil technology conference, proceedings, SPE-13703: Dallas, Society of Petroleum Engineers, p. 185-190.
- McCulloh, T.H., Kandle, J.R. and Schoellhamer, 1968, Application of gravity measurements in wells to problems of reservoir evaluation, <u>in</u> 9th annual logging symposium transactions, paper 0: Houston, Society of Professional Well Log Analysts, 28 p.
- Overton, A., 1975, Borehole gravimetry, in A.V. Dyck, ed., Borehole geophysics applied to metallic mineral prospecting—A review: Geological Survey of Canada, Paper 75-31, p. 31-34.
- Rasmussen, N.F., 1975, The successful use of the borehole gravity meter in northern Michigan: The Log Analyst, v. 16(5), September-October, p. 3-10.
- Rasmussen, N.F., 1975, Borehole gravimeter finds bypassed oil, gas: Oil and Gas Journal, v. 73(39), September 29, p. 100-104.
- Robbins, S.L., 1980, Bibliography with abridged abstracts of subsurface gravimetry (especially borehole) and corresponding in-situ rock density determinations: U.S. Geological Survey, Open-File Report, 80-710, 47 p.
- Schmoker, J.W., 1978, Accuracy of borehole gravity data: Geophysics, v. 43(3), p. 538-542.
- Schmoker, J.W., 1977, Density variations in a quartz diorite determined from borehole gravity measurements, San Benito County, California: The Log Analyst, v. 18(2), March-April, p. 32-38.

Charman, h.R., and Theopeon, D.T., 1980, Aprilment of transferred lexing

muchas techniques in exploration, membranes as assuming a single

- Aylmer, J.A., Charbucinski, J., Eisler, P.L. and Youl, S.F., 1984, Quantitative borehole logging of manganese ore by prompt neutron-gamma and neutron activation methods, in 25th annual logging symposium transactions, paper D: Houston, Society of Professional Well Log Analysts, 20 p.
- Aylmer, J.A., Eisler, P.L., Mathew, P.J. and Wylie, A.W., 1976, The use of natural gamma radiation for estimating the iron content of sedimentary iron formations containing shale bands, in Nuclear techniques in geochemistry and geophysics: Vienna, Austria, International Atomic Energy Agency, p. 53-74.
- Baicker, J.A., Stone, J.M., Lister, D.E., Schneider, G., Senftle, F. and Tanner, A., 1982, In-situ ore grade determination and other applications of high-resolution gamma ray spectroscopy in mineral and oil logging: Society of Mining Engineers of AIME, Fall meeting [Honolulu] preprint SME-AIME 82-365, 9 p.
- Baltosser, R.W. and Lawrence, H.W., 1970, Application of well logging techniques in metallic mineral mining: Geophysics, v. 35(1), p. 143-152.
- Bristow, Q. and Killeen, P.G., 1982, Natural gamma-ray spectral logging using scintillation detectors, in Symposium on uranium exploration methods [Paris, June 1-4, 1982], proceedings: Paris, Nuclear Energy Agency, Organization for Economic Cooperation and Development, p. 777-791.
- Bristow, Q., Killeen, P.G., Mwenifumbo, J.C., 1982, Comparison of standardized gamma-ray log calibration measurments-Ottawa, Adelaide and Grand Junction, in Symposium on uranium exploration methods [Paris, June 1-4, 1982], proceedings: Paris, Nuclear Energy Agency, Organization for Economic Cooperation and Development, p. 715-727.
- Brott, C.A., Millard, W.A., Lively, J.M. and Goff, D.D., 1985, In-situ mineral analysis in boreholes, in P. Kileen, ed., Borehole geophysics for mining and geotechnical applications [International symposium and workshop, Ottawa, August 29-31, 1983, proceedings]: Geological Survey of Canada, Paper 85-27. Available in early 1986
- Chapman, B.H., and Thompson, D.T., 1984, Applications of geophysical logging within skarn-type deposits: The Log Analyst, v. 25(2), March-April, p. 13-24.
- Chrusciel, E., Niewodniczanski, J., Palka, K.W. and Roman, S., 1977,

 Determination of sulphur content in boreholes by neutron capture, in

 Nuclear techniques and mineral resources 1977 [International symposium on
 nuclear techniques in exploration, extraction and processing of mineral
 resource, 1977, proceedings]: Vienna, International Atomic Energy Agency,
 p. 301-311.
- Conaway, J.G., 1983, Digital filtering of geophysical logs <u>in</u> A.A. Fitch, ed., Developments in geophyscial methods--5: London, Applied Science Publishers, p. 65-105.

- Conaway, J.G., 1982, Principles of inverse filtering applied to gamma ray logs, in Symposium on uranium exploration methods [Paris, June 1-4, 1982], proceedings: Paris, Nuclear Energy Agency, Organization for Economic Cooperation and Development, p. 753-766.
- Conaway, J.G., 1980, Uranium concentrations and the system response function in gamma ray logging: Geological Survey of Canada, Paper 80-1A, p. 77-87.
- Conaway, J.G., Killeen, P.G. and Bristow, Q., 1981, Variable formation parameters and nonlinear errors in quantitative gamma ray log interpretation: Tulsa, Society of Exploration Geophysicists, 50th annual meeting technical papers, paper M-11, v. 5, p. 2523-2534.
- Conaway, J.G., Bristow, Q., Killeen, P.G., 1980, Optimization of gamma-ray logging techniques for uranium: Geophysics, v. 45(2), p. 292-311.
- Cossy, S.P.J. and Frank, H.J., 1983, Uranium mineralization and use of resistance log character in deltaic point bars--Franklin Mines, Karnes County, Texas: AAPG Bulletin, v. 67(1), p. 131-151.
- Czubek, J.A., 1979, Modern trends in mining geophysics and nuclear borehole logging methods for mineral exploration, in P.J. Hodd, ed., Geophysics and geochemistry in the search for metallic ores [Exploration 77, Ottawa, Canada, October 1977, proceedings]: Geological Survey of Canada, Economic Geology Report 31, p. 231-272.
- Daniels, J.J. and Dyck, A.V., 1984, Borehole resistivity and electromagnetic methods applied to mineral exploration: IEEE Transactions on Geoscience and Remote Sensing, v. GE-22(1), January, p. 80-87.
- Daniels, J. and Scott, J., 1978, The role of borehole electrical measurements in uranium exploration: U.S. Geological Survey, Open-File Report 78-326, 18 p.
- Dodd, P.H., 1966, Quantitative logging and interpretation systems to evaluate uranium deposits, in 7th annual logging symposium transactions, paper P: Houston, Society of Professional Well Log Analysts, 21 p. Reprinted in 1978, Gamma Ray, Neutron and Density Logging: Houston, Society of Professional Well Log Analysts, Reprint volume, paper DD, 21 p.
- Dodd, P.H., Droullard, R.F. and Lathan, C.P., 1970, Borehole logging methods for exploration and evaluation of uranium deposits, in L.W. Morely, ed., Mining and groundwater geophysics--1967: Geological Survey of Canada, Economic Geology Report 26, p. 401-415.
- Dodd, P.H. and Eschliman, D.H., 1972, Borehole logging techniques for uranium exploration and evaluation, in S.H.U. Bowie, M. Davis and D.Ostle, eds., Uranium prospecting handbook [1971 NATO-sponsored advanced study institute, proceedings]: London, Institution of Mining and Metallurgy, p. 244-276.

- Dyck, A.V., 1975, Electrical borehole methods applied to mineral prospecting, in A.V. Dyck, ed., Borehole geophysics applied to metallic mineral prospecting—A review: Geological Survey of Canada Paper, 75-31, p. 13-30.
- Dyck, A.V. and Young, R.P., 1979, Physical characterization of rock masses using borehole methods: Geophysics, v. 50(12), p. 2530-2541.
- Furlong, V.L.R., 1982, Converting the numerical values to geologic reality, in Symposium on uranium exploration methods [Paris, June 1-4, 1982], proceedings: Paris, Nuclear Energy Agency, Organization for Economic Cooperation and Development, p. 767-775.
- George, D.C., 1982, Total count gamma-ray logging--Correction factors and logging model grade assignments, in Symposium on uranium exploration methods [Paris, June 1-4, 1982], proceedings:: Paris, Nuclear Energy Agency, Organization for Economic Cooperation and Development, p. 729-751.
- George, D.C. and Scott, J.H., 1982, Review of magnetic susceptibility logging and its application to uranium exploration, in Symposium on uranium exploration methods [Paris, June 1-4, 1982], proceedings: Paris, Nuclear Energy Agency, Organization for Economic Cooperation and Development, p. 837-856.
- Givens, W.W., Mills, W.R., Dennis, C.L. and Caldwell, R.L., 1976, Uranium assay logging using a pulsed 14-MEV neutron source and detection of delayed fission neutrons: Geophysics, v. 41(3), p. 468-490.
- Glenn, W.E. and Hohmann, G.W., 1981, Well logging and borehole geophysics in mineral exploration: Economic Geology, 75th anniversary volume, p. 850-862.
- Glenn, W.E. and Nelson, P.H., 1979, Borehole logging techniques applied to base metal ore deposits, in P.J. Hodd, ed., Geophysics and geochemistry in the search for metallic ores [Exploration 77, Ottawa, Canada, October 1977, proceedings]: Geological Survey of Canada, Economic Geology Report 31, p. 273-294.
- Goldman, L.H. and Marr, H.E., 1979, Applications of high resolution gamma ray spectroscopy to well logging, in 20th annual logging symposium transactions, paper GG: Houston, Society of Professional Well Log Analysts, 8 p.
- Hale, L.A., 1967, Phosphate exploration using gamma-radiation logs, Dry Valley, Idaho, in Anatomy of the western phosphate field--Intermountain Association of Geologists 15th annual field conference: Salt Lake City, Utah, Intermountain Association of Geologists, p. 147-159.
- Hallenburg, J.K., 1984, Geophysical logging for mineral and engineering applications: Tulsa, Pennwell Books, 254 p.
- Hallenburg, J.K., 1978, Use of the spontaneous potential curve in a mineral mapping technique, in 19th annual logging symposium transactions, paper U: Houston, Society of Professional Well Log Analysts, 12 p.

- Hallenburg, J.K., 1973, Interpretation of gamma-ray logs, in 14th annual logging symposium transactions, paper G: Houston, Society of Professional Well Log Analysts, 28 p. Reprinted in the 1973, The Log Analyst, v. 14(6), November-December, p. 3. Quantitative use of the gamma ray curve for uranium assay.
- Hood, P.J., ed., 1979, Geophysics and geochemistry in the search for metallic ores [Exploration 77, Ottawa, Canada, October 1977, proceedings]: Geological Survey of Canada, Economic Geology Report 31, p. See case histories.
- Hood, P.J. and Dyck, A.V., 1975, Magnetic drillhole measurements in mineral exploration, in A.V. Dyck, ed., Borehole geophysics applied to metallic mineral prospecting—A review: Geological Survey of Canada Paper, 75-31, p. 35-38.
- Howell, E.P. Grant, O.J., Jr. and Crebs, T.J., 1978, Slim hole logging and analysis for uranium exploration: Dallas, Society of Petroleum Engineers, 53nd annual meeting [Houston] preprint SPE-7434. Later published 1980, Journal of Petroleum Technology, v. 32(7), p. 1144-1150.
- IRT Corporation, 1976, Future research in borehole assaying technology, volume 1--Technology assessment of borehole logging techniques, 325 p.: U.S. Bureau of Mines, Open-File Report 119(1)-76 (Contract J0255018, Final Report, March 18, 1976).
- IRT Corporation, 1976, Future research in borehole assaying technology, volume 2--Bibliography of borehole assaying techniques, 1965-75: U.S. Bureau of Mines, Open-File Report 119(2)-76 (Contract J0255018, Final Report, March 18, 1976).
- Jessop, A.M. and Judge, A.S., 1975, Temperature measurement in boreholes for the mining industry, in A.V. Dyck, ed., Borehole geophysics applied to metallic mineral prospecting—A review: Geological Survey of Canada Paper, 75-31, p. 55-66.
- Keller, G.W., 1970, Application of resistivity methods in mineral and groundwater exploration programs, in L.W. Morely, ed., Mining and groundwater geophysics--1967: Geological Survey of Canada Economic Geology Report 26, p. 51-66.
- Killeen, P.G., ed., 1985, Borehole geophysics for mining and geotechnical applications [International symposium and workshop, Ottawa, Ontario, August 29-31, 1983, proceedings]: Geological Survey of Canada, Paper 85-27. Available in early 1986.
- Killeen, P., 1983, Borehole logging for uranium by measurement of natural gamma-radiation: International Journal of Applied Radioactive Isotopes, v. 34(1), p. 231-260.
- Killeen, P.G., 1982, Gamma-ray logging and interpretation, in A.A. Fitch, ed., Developments in geophysical exploration methods, 3: London, Applied Science Publishers, p. 95-150.

- Killeen, P.G., 1979, Gamma ray spectrometric methods in uranium exploration-Application and interpretation, in P.J. Hodd, ed., Geophysics and geochemistry in the search for metallic ores [Exploration 77, Ottawa, Canada, October 1977, proceedings]: Geological Survey of Canada, Economic Geology Report 31, p. 163-229.
- Killeen, P.G., 1975, Nuclear techniques for borehole logging in mineral exploration, in A.V. Dyck, ed., Borehole geophysics applied to metallic mineral prospecting—A review: Geological Survey of Canada, Paper 75-31, p. 39-52.
- Lovborg, L., 1972, Assessment of uranium by gamma-ray spectrometry, <u>in</u> S.H.U. Bowie, M. Davis and D.Ostle, eds., Uranium prospecting handbook [1971 NATO advanced study institute, proceedings]: London, The Institution of Mining and Metallurgy, p. 157-173.
- Lovborg, L., Nyegaard, P., Christiansen, E.M., Nielsen, B.L., 1980, Borehole logging for uranium by gamma-ray spectrometry: Geophysics, v. 45(6), p. 1077-1090.
- Lubecki, A., Doebele, R., and Herrmann, W., 1982, Direct uranium logging using X-ray flourescence technique, in Symposium on uranium exploration methods [Paris, June 1-4, 1982], proceedings: Paris, Nuclear Energy Agency, Organization for Economic Cooperation and Development, p. 821-835.
- Mwenifumbo, C.J., 1985, Application of borehole geophysics in exploration of gold, in 26th annual logging symposium transactions, paper DD: Houston, Society of Professional Well Log Analysts, 24 p.
- Mwenifumbo, C.J., Urbancic, T.I. and Killeen, P.G., 1983, Preliminary studies on gamma ray spectral logging in exploration for gold, in Current Research, part A: Geological Survey of Canada, Paper 83-1A, p. 391-397.
- Overton, A., 1975, Borehole seismic methods, <u>in</u> A.V. Dyck, ed., Borehole geophysics applied to metallic mineral prospecting—A review: Geological Survey of Canada Paper, 75-31, p. 3-12.
- Overton, A., 1975, Borehole gravimetry, in A.V. Dyck, ed., Borehole geophysics applied to metallic mineral prospecting—A review: Geological Survey of Canada Paper, 75-31, p. 31-34.
- Scott, J.H., 1974, Well-logging techniques for mineral deposit evaluation--A review: U.S. Bureau of Mines, Information Circular 8627, 45 P.
- Scott, J.H. and Daniels, J.J., 1976, Non-radiometric borehole geophysical detection of geochemical haloes surrounding sedimentary uranium deposits, in Symposium on exploration for uranium ore deposits [Vienna, 3/29-4/2/76], proceedings: Vienna, International Atomic Energy Agency, p. 379-390.
- Scott, J.H., Daniels, J.J., Habrouck, W.P., Guu, J.Y., 1975, Hole-to-hole geophysical measurement for mineral exploration, in 16th annual logging symposium transactions, paper KK: Houston, Society of Professional Well Log Analysts, 14 p.

- Scott, J.H., Daniels, J.J., Reynolds, R.L. and Seeley, R.L., 1983, Magnetic-susceptibility logging in sedimentary uranium environments: The Log Analyst, v. 24(2), March-April, p. 16-21.
- Scott, J.H. and Sena, J., 1974, Acoustic logging for mining applications, <u>in</u>
 15th annual logging symposium transactions, paper P: Houston, Society of
 Professional Well Log Analysts, 10 p.
- Smith, R.J., 1985, Geophysics in Australian mineral exploration: Geophysics, v. 50(12), p. 2637-2665. Case histories.
- Snyder, D.D., Merkel, R.H. and Williams, T.T., 1977, Complex formation resistivity--The forgotten half of the resistivity log, in 18th annual logging symposium transactions, paper Z: Houston, Society of Professional Well Log Analysts, 39 p.
- Sumner, J.S., 1979, The induced-polarization exploration method, <u>in</u> P.J. Hodd, ed., Geophysics and geochemistry in the search for metallic ores [Exploration 77, Ottawa, Canada, October 1977, proceedings]: Geological Survey of Canada, Economic Geology Report 31, p. 123-133.
- Sumner, J.S., 1976, Principles of induced polarization for geophysical exploration: New York, Elsevier Scientific Publishing Company, Developments in Economic Geology 5, 277 p.
- Tanner, A.B., 1982, Direct uranium logging by high-resolution gamma-ray spectrometry, in Symposium on uranium exploration methods [Paris, June 1-4, 1982], proceedings: Paris, Nuclear Energy Agency, Organization for Economic Cooperation and Development, p. 793-810.
- Threadgold, P., 1970, Applications of well-logging techniques to mining exploration boreholes, in Mining and petroleum geology [9th Commonwealth mining and metallurgical congress, 1969, proceedings]: London, The Institution of Mining and Metallurgy, p. 731-747.
- Tixier, M.P. and Alger, R.P., 1967, Log evaluation of non-metallic mineral deposits, in 8th annual logging symposium transactions, paper R: Houston, Society of Professional Well Log Analysts, 22 p. Later published in 1970, Geophysics, v. 35(1) p. 124-142. Reprinted in 1971, Well Logging: Dallas, Society of Petroleum Engineers, Reprint Series 1, p. 368-390.
- Urbancic, T. and Mwenifumbo, C.J., 1985, Multiparameter logging techniques applied to gold exploration, in P. Kileen, ed., Borehole geophysics for mining and geotechnical applications [International symposium and workshop, Ottawa, August 29-31, 1983, proceedings]: Geological Survey of Canada, Paper 85-27. Available in early 1986
- Veneziani, I.I., Pirson, S.J., Colombo, U. and Broome, M.B., 1972, The Redox log, in 13th annual logging symposium transactions, paper D: Houston, Society of Professional Well Log Analysts, 18 p.
- Wylie, A.W. and Eisler, P.L., 1978, Determining the grade, bulk density and porosity of iron ores by the methods of nuclear geophysics: Atomic Energy in Australia, v. 21, p. 2-13.

20. GROUND WATER APPLICATIONS (See also 15. Fracture detections, and 21. Igneous and metamorphic)

- Alger, R.P., 1966, Interpretation of electric logs in fresh water wells in unconsolidated formations, in 7th annual logging sumposium transactions, paper CC: Houston, Society of Professional Well Log Analysts, p.
- Batt, L.S., 1973, The use of well logging techniques in water resources development, in 2nd annual logging symposium transactions, paper 7: Paris, Society of Professional Well Log Analysts, Paris Chapter (SAID), 25 p.
- Biella, G., Lozej, A. and Tabacco, I., 1983, Experimental study of some hydrogeophysical properties of unconsolidated porous media: Ground Water, v. 21(6), November-December, p. 741-751. A discussion of the limitations of Archie's equation.
- DeLuca, R.J. and Buckley, B.K., 1985, Borehole logging to delineate fractures in a contaminated bedrock aquifer, in 1985 NWWA conference on surface and borehole geophysical methods in ground water investigations [Fort Worth, Texas, February 12-14], proceedings: Worthington, Ohio, National Water Well Association, p. 387-398.
- Dobecki, T.L. and Romig, P.R., 1985, Geotechnical and groundwater geophysics: Geophysics, v. 50(12), p. 2621-2636.
- Dyck, J.H., Keys, W.S. and Meneley, W.A., 1972, Application of geophysical logging to groundwater studies in southeastern Saskatchewan: Canadian Journal of Earth Sciences, v. 9, p. 78-94.
- Greenhouse, J.P. and Pehme, P., 1985, Stratigraphy and physical properties of unconsolidated glacial deposits using borehole geophysics, in P. Kileen, ed., Borehole geophysics for mining and geotechnical applications [International symposium and workshop, Ottawa, August 29-31, 1983, proceedings]: Geological Survey of Canada, Paper 85-27. Available in early 1986
- Hess, A.E., 1984, Use of a low-velocity borehole flowmeter in the study of hydraulic conductivity in fractured rock, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 812-832.
- Hess, J.W., Wheatcraft, S.W., Spencer, D.D. and Adams, W.M., 1984, Evaluation of the applicability of some existing borehole instruments to hazardous waste site characterization and monitoring, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 762-787.
- Keys, W.S., 1970, Borehole geophysics as applied to groundwater, in L.W. Morley, ed., Mining and grounwater geophysics--1967: Geological Survey of Canada, Economic Geology Report 26, p. 598-614.

- Keys, W.S. and MacCary, L.M., 1973, Location and characteristics of the interface between brine and fresh water from geophysical logs of boreholes in the upper Brazos River basin, Texas: U.S. Geological Survey Professional Paper, 809-B, 23 p.
- Keys., W.S. and MacCary, L.M., 1971, Application of borehole geophysics to water-resources investigations: U.S. Geological Survey, Techniques of Water-Resources Investigations, book 2, chapter El, 126 p. A revised and expanded edition is currently in preparation.
- Kwader, T., 1985, Resistivity-porosity cross plots for determining in situ formation water quality--Case examples, in 1985 NWWA conference on surface and borehole geophysical methods in ground water investigations [Fort Worth, Texas, February 12-14], proceedings: Worthington, Ohio, National Water Well Association, p. 415-424.
- Kwader, T., 1984, The use of geophysical logs for determining formation water quality, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 833-841.
- Kwader, T., 1984, Estimating aquifer permeability from formation resistivity factors, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 713-721.
- Kwader, T., 1982, Interpretation of geophysical logs in shallow carbonate environments and their applications to ground water resource investigations: T. Kwader Inc., 201 p.
- Levine, E.N., Cybriwsky, Z.A. and Toksoz, M.N., 1984, Detection of permeable rock fractures and estimation of hydraulic conductivity by 3-D vertical seismic profiling, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 853-876.
- Lindsey, G.P., 1985, Dry hole resistivity logging, in 1985 NWWA conference on surface and borehole geophysical methods in ground water investigations [Fort Worth, Texas, February 12-14], proceedings: Worthington, Ohio, National Water Well Association, p. 371-376.
- MacCary, L.M., 1980, Use of geophysical logs to estimate water-quality trends in carbonate aquifers: U.S. Geological Survey, Water-Resources Investigations 80-57, 23 p.
- MacCary, L.M., 1978, Interpretation of well logs in a carbonate aquifer: U.S. Geological Survey, Water-Resources Investigations 78-88, 30 p. Later published in 1983 as Geophysical logging in carbonate aquifers: Ground Water, v. 21(3), p. 324-342.

- McConnell, C.L., 1985, Time dependence of the quivalent water resistivity in fresh water wells: The Log Analyst, v. 26(3), May-June, p. 12-17.
- McConnell, C.L., 1983, Spontaneous potential corrections for ground-water salinity calculations; Carter County, Oklahoma, U.S.A.: Journal of Hydrology, v. 65, p. 363-372.
- Montgomery, R.J., Taylor, R.W., Koch, H.A., 1985, Use of downhole geophysical methods in determining the internal structure of a large landfill, in 1985 NWWA conference on surface and borehole geophysical methods in ground water investigations [Fort Worth, Texas, February 12-14], proceedings: Worthington, Ohio, National Water Well Association, p. 377-386.
- Pirson, S.J., 1983, Geologic well log analysis, 3rd ed.: Houston, Gulf Publishing Company, 475 p. See chapters 8-10 on hydrodynamics, p. 216-333.
- Taylor, K.C., Wheatcraft, S.W., and McMillion, L.G., 1985, A strategy for the hydrologic interpretation of well logs, in 1985 NWWA conference on surface and borehole geophysical methods in ground water investigations [Fort Worth, Texas, February 12-14], proceedings: Worthington, Ohio, National Water Well Association, p. 314-323.
- Taylor, T.A. and Dey, J.A., 1985, Bibliography of borehole geophysics as applied to ground-water hydrology: U.S. Geological Survey Circular 926, 62 p.
- Vonhof, J.A., 1966, Water quality determination from spontaneous-potential electric log curves: Journal of Hydrology, v. 4, p. 341-347.
- Williams, J.H., Carswell, L.D., Lloyd, O.B., Jr., and Roth W.C., 1984,
 Characterization of ground water circulation in selected fractured rock
 aquifers using borehole temperature and flow logs, in D.M. Nielsen and M.
 Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics
 methods in ground water investigations, proceedings: Worthington, Ohio,
 National Water Well Association, p. 842-852.
- Woodward, D.G., 1984, Areal lithologic changes in bedrock aquifers in southeastern Minnesota as determined from natural-gamma borehole logs, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 788-800.
- Working Group on Nuclear Techniques in Hydrology, 1971, Nuclear well logging in hydrology: Vienna, Austria, International Atomic Energy Agency, Technical Reports Series, n. 126, 90 p.

Barrelle Project Reserves Vivision, Report EMI/OCED-15, 41 p.

21. IGNEOUS AND METAMORPHIC ROCKS (See also 15. Fracture detection, and 22. Geothermal)

- Anderson, R.N. and O'Malley, H., 1985, Frequency response and attenuation changes across highly altered fracture zones crosscutting a fast formation: the oceanic crust of the Mid-Atlantic Ridge in 26th annual well logging symposium transactions, paper LLL: Houston, Society of Professional Well Log Analysts, 12 p.
- Anderson, R.N., O'Malley, H. and Newmark, R.L., 1985, Use of geophysical logs for quantitative determination of fracturing, alteration and lithostratigraphy in the upper oceanic crust, Deep Sea Drilling Project, holes 504B and 556, in Initial reports of the the Deep Sea Drilling Project, v. 83: Washington D.C., U.S. Government Printing Office, p. 443-478.
- Blackwood, D.J. and Peveraro, R.C.A., 1983, Determination of rock properties in a metamorphic/igneous formation by integrated formation evaluation, in 24th annual logging symposium transactions, paper AAA: Houston, Society of Professional Well Log Analysts, 25 p.
- Chapman, B.H., and Thompson, D.T., 1984, Applications of geophysical logging within skarn-type deposits: The Log Analyst, v. 25(2), March-April, p. 13-24.
- Daniels, J.J., Scott, J.H. and Olhoeft, G., 1981, Interpreting Precambrian metamorphic geology, in 22nd annual logging symposium transactions, paper T: Houston, Society of Professional Well Log Analysts, 16 p.
- Douglas, A.C. and Millett, M.R., 1978, Total intensity magnetometer logging as a stratigraphic tool in Tertiary volcanic rock: Lawrence Livermore Laboratory Report, UCRL-52617, 11 p.
- Itoh, T., Kato, S. and Miyairi, M., 1982, A quick method of log interpretation for very low resistivity volcanic tuff by the use of CEC data, in 23rd annual logging symposium transactions, paper NN: Houston, Society of Professional Well Log Analysts, 26 p.
- Jones, J.W., Simpson, E.S. and Neuman, S.P., 1984, Geophysical investigation of fractured crystalline rock near Oracle, Arizona, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in groundwater investigations, proceedings: Worthington, Ohio, National Water Well Association, p. 877-896.
- Keys, W.S., 1984, A synthesis of borehole geophysical data at the Underground Research Laboratory, Manitoba, Canada: U.S. Department of Energy, Battelle Project Management Division, Report BMI/OCRD-15, 43 p.

- Keys, W.S., 1979, Borehole geophysics in igneous and metamorphic rocks, in 20th annual logging symposium transactions, paper 00: Houston, Society of Professional Well Log Analysts, 26 p. Later published in 1979, The Log Analyst, v. 20(4), July-August, P. 14-28. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. III-177 III-191.
- Khatchikian, A., 1982, Log analysis of oil-bearing igneous rocks, in 23rd annual logging symposium transactions, paper AA: Houston, Society of Professional Well Log Analysts, 34 p. Later published in condensed form 1983, World Oil v. 197(7), December, p. 79-98.
- Khatchikan, A. and Lesta, P, 1973, Log evaluation of tuffites and tuffaceous sandstones in southern Argentina, in 14th annual logging symposium transactions, paper K: Houston, Society of Professional Well Log Analysts, 23 p.
- Kiss, B. and Toth, J., 1985, Well log interpretation of metamorphic hydrocarbon-bearing formations: First Break, v. 3(5), may, p. 24-31.
- McCann, D.M., Barton, K.J. and Hearn, K., 1983, Geophysical well logging in a crystalline rock mass, in 8th formation evaluation symposium transactions, paper G: London, Society of Professional Well Log Analysts London Chapter, 25 p.
- Newmark, R.L., Anderson, R.N., Moos, D., Zoback, M.D., 1985, Sonic and ultrasonic logging of hole 504B and its implications for the structure, porosity, and stress regime of the upper 1 km of the oceanic crust, in Initial reports of the the Deep Sea Drilling Project, v. 83: Washington D.C., U.S. Government Printing Office, p. 479-510. Also published 1985, Structure, porosity and stress regime of the upper oceanic crust--Sonic and ultrasonic logging of DSDP hole 504B, Tectonophysics, v. 118, p. 1-42.
- Paillet, F.L. amd Keys, W.S., 1985, Applications of borehole geophysics in characterizing the hydrology of fractured rocks, in D.M. Nielsen and M. Curl, eds., 1984 NWWA/EPA conference on surface and borehole geophysics methods in ground water investigations, proceedings: Worthington, Ohio, National Water Well Association, 743-761.
- Ritch, H.J., 1975, An open hole logging evaluation in metamorphic rocks, in 16th annual logging symposium transactions, paper V: Houston, Society of Professional Well Log Analysts, 11 p.
- Salisbury, M.H., Scott, G.H., Becker, K., Bosum, W., Broglia, C., Carlson, R., Fisher, A., Gieskes, J., Holmes, M., Hoskins, H., Legrand, J., Moos, D., Rio, D, Stephen R., Wilkens, R., 1985, Ocean drilling program—looking down an old hole: Nature, v, 316(6030), August 22, p. 682.

- Sanyal, S.K., Juprasert, S. and Jusbasche, M., 1979, An evaluation of a rhyolite-basalt-volcanic ash sequence from well logs, in 20th annual logging symposium transactions, paper TT: Houston, Society of Professional Well Log Analysts, 14 p. Later published in 1980, The Log Analyst, v. 20(1), January-February, p. 3-9. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. III-169-III-175.
- Schmoker, J.W., 1977, Density variations in a quartz diorite determined from borehole gravity measurements, San Benito County, California: The Log Analyst, v. 18(2), March-April, p. 32-38.
- Soonawala, N.M., 1983, Geophysical logging in granites: Geoexploration, v. 21(3), p. 221-230.
- Stefansson, V., Gudmundsson, A. and Emmerman, R., 1982, Gamma ray logging in Icelandic rocks: The Log Analyst, v. 23(6), November-December, p. 11-16.
- West, F.G. and Laughlin, A.W., 1976, Spectral gamma logging in crystalline basement rocks: Geology, v. 6, p. 617-618.

to Exchagot, E.E. Dougherty, L.L. Eusdy, eds . Forwarion evaluation in Resid dominated genthermal reservoires 3.5. Repertment of Shergy, Report

describation in liquid dominated seethernal reservoirs oning the Dust

Ersharit, T., Ghasmise, S. and Abdasoan, D., 1901, Lithology and mydrothernal

22. GEOTHERMAL WELL-LOG EVALUATION (See also 15. Fracture detection; 20. Ground water; 21. Igneous rocks)

- Baker, L.E., Campbell, A.B., Hughen, R.L., 1975, Well-logging technology and geothermal applications—A survey and assessment with recommendations: Sandia Laboratory, Report SAND 75-0275, 75 P.
- Benoit, W.R., Sethi, D.K., Fertl, W.H. and Mathews, M., 1980, Geothermal well log analysis at Desert Peak, Nevada, in 21st annual logging symposium transactions, paper AA: Houston, Society of Professional Well Log Analysts, 41 p. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. VII-69-VII-109.
- Cochran, L.E., 1979, Formation evaluation in the geothermal environment--The Geysers steam field, California: Dallas, Society of Petroleum Engineers, 54th annual meeting [Las Vegas] preprint SPE-8452, 12 p.
- Dunlap, M.F. and Dorfman, M.H., 1981, Problems and partial solutions of using the SP log to predict water salinity in deep hot wells, in D.G. Bebout and A.L. Bachman, eds., 5th conference on geopressured-geothermal energy, proceedings: Baton Rouge, Louisiana State University, p. 189-192. Also published in 1981, Geothermal Resource Council Transactions, v. 5, October, p. 283-286.
- Ehring, T.W., Lusk, L.A., Grubb, J.M., Johnson, R.B., DeBries, M.R. and Fertl, W.H., 1978, Formation evaluation concepts for geothermal reservoirs, in 19th annual logging symposium transactions, paper FF: Houston, Society of Professional Well Log Analysts, 14 p.
- Ershaghi, I. and Abdassah, D., 1983, Interpretation of some wireline logs in geothermal fields of the Imperial Valley, California, in California regional meeting (Ventura), proceedings, SPE-11745: Dallas, Society of Petroleum Engineers, p. 727-736.
- Ershaghi, I., Dougherty, E.L., Ucok, H., Ghassemi, F., 1981, Problems in estimation of salinity profile in liquid dominated geothermal systems, in I. Ershaghi, E.E. Dougherty, L.L. Handy, eds., Formation evaluation in liquid dominated geothermal reservoirs: U.S. Department of Energy, Report DOE/ET/28384-T1, p. 36-38.
- Ershaghi, I., Dougherty, E.L., Herzberg, D. and Ucok, H., 1981, Permeability determination in liquid dominated geothermal reservoirs using the Dual Induction Laterolog, in I. Ershaghi, E.E. Dougherty, L.L. Handy, eds., Formation evaluation in liquid dominated geothermal reservoirs: U.S. Department of Energy, Report DOE/ET/28384-T1, p. 41-59.
- Ershaghi, I., Ghaemian, S. and Abdassah, D., 1981, Lithology and hydrothermal alteration determination from well logs for the Cerro Prieto wells, Mexico: Los Alamos National Laboratory, Report LA-9075-MS, 28 p. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. III-75-III-106.

- Ershaghi, I., Ghaemian, U. and Mathews, M., 1980, Detection of hydrothermal alteration in a sedimentary type geothermal system using well logs:
 Dallas, Society of Petroleum Engineers, 55th annual meeting (Dallas) preprint SPE-9499, 11 p.
- Ershaghi, I., Phillips, L.B., Dougherty, E.L. and Handy, L.L., 1979,
 Application of oil-field well log interpretation techniques to the Cerro
 Prieto Geothermal Field: Los Alamos Scientific Laboratory, Report
 LA-8130-MS, 142 p.
- Fertl, W.H., 1980, Geophysical well logs applied to geothermal resource evaluation, in P.F. Burollet and V. Ziegler, eds., Energy resources, colloqium C2, 26th international geological congress: Paris, Editions Technip, p. 461-468.
- Glenn, W.E. and Ross, H.P., 1982, A study of well logs from Cove Fort-Sulpurdale KGRA, Millard and Beaver Counties, Utah:: Earth Science Laboratory Division, University of Utah Research Institute, Report n. 75, 51 p.
- Glenn, W.E., Ross, H.P. and Atwood, 'J.W., 1980, Review of well logging in the Basin and Range known geothermal resource areas: Dallas, Society of Petroleum Engineers, 55th annual meeting (Dallas) preprint SPE-9496. Later published in 1982, Journal of Petroleum Technology, v. 34(5), p. 1104-1118. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. VII-121-VII-135.
- Gregory, A.R. and Backus, M.M., 1980, Geopressured formation parameters, geothermal well, Brazoria County, Texas, in M.H. Dorfman and W.L. Fisher, eds., 4th U.S. Gulf Coast geopressured-geothermal energy conference, proceedings, volume 1: Austin, University of Texas, Center for Energy Studies, p. 235-311.
- Halfman, S.E., Lippman, M.J., Zelwer, R. and Howard, J.H., 1984, Geologic interpretation of geothermal fluid movement in Cerro Preito Field, Baja California, Mexico: AAPG Bulletin, v. 68(1), p. 18-30.
- Hirakawa, S. and Yamaguchi, S., 1982, Geothermal well logging and its interpretation, in P. Kruger, H.J. Ramey, et.al., eds., 7th DOE geothermal reservoir engineering workshop [Stanford, California], proceedings: U.S. Department of Energy, Report CONF-811201, p. 115-119.
- Jones, P.H., 1977, Geopressured geothermal energy in the south-central United States--Frontier areas and exploration techniques, in M.D. Campbell, ed., Geology of alternate energy resources in the south-central United States: Houston, Houston Geological Society, chapter 11, p. 215-250.
- Keys, W.S., 1982, Borehole geophysics in geothermal exploration, <u>in</u> A.A. Fitch, ed., Developments in geophysical exploration methods 3: London, Applied Science Publishers, p. 239-268.
- Keys, W.S. and Sullivan, J.K., 1979, Role of geophysics in defining physical characteristics of the Raft River geothermal reservoir, Idaho: Geophysics, v. 44(6), p. 1116-1141.

- Littleton, R.T. and Burnett, E.E., 1976, The salinity profile of the East Mesa Field as determined from dual induction resistivity and SP logs, in 1st EPA workshop on sampling geothermal effluents, proceedings: U.S. Environmental Protection Agency, Report EPA-600/9-76-011, p. 114-125.
- Lyons, D.J. and van de Kamp, P.C., 1980, Subsurface geological and geophysical study of the Cerro Prieto geothermal field: Lawrence-Berkeley Laboratory Report LBL-10540, 14 p.
- Lyons, D.J. and van de Kamp, P.C., 1980, Subsurface geological and geophysical study of the Cerro Prieto Geothermal Field, Baja California, Mexico: Lawrence Berkeley Laboratory, Report LBL-10540, 95 p.
- McNitt, J.R., Sanyal, S.K. and Peterson, C.A., 1981, Synergistic interpretation of formation characteristics of a low temperature geothermal well in susanville, California: Geothermal Resources Council Transactions, v. 5, p. 303-306.
- Rigby, F.A., 1981, Applications of geothermal well log data for evaluation of reservoir potential: Los Alamos Scientific Laboratory, Report LA-8778-MS, 69 p. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. III-3-III-73.
- Rigby, F.A., 1980, Fracture identification in an igneous geothermal reservoir, Surprise Valley, California, in 21st annual logging symposium transactions, paper Z: Houston, Society of Professional Well Log Analysts, 9 p. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. VII-111-VII-119.
- Rigby, F. and McEuen, R.B., 1980, An example of resistivity log extrapolation with magnetoteulluric data for a geothermal site: Dallas, Society of Petroleum Engineers, 55nd annual meeting [Dallas] preprint SPE-9497. Later published in 1982, Journal of Petroleum Technology, v. 34(11), p. 2683-2688.
- Rigby, F.A. and Zebal, G.P., 1981, Case history on geothermal well log interpretation Surprise Valley, California: Los Alamos Scientific Laboratory, Report LA-8598-MS, 58 p.
- Ross, E.W., Vagelatos, N., Dickerson, J.M. and Nguyen, V., 1982, Nuclear logging and geothermal log interpretation—Formation temperature sonde evaluation: Los Alamos National Laboratory reprot LA-9159-MS, 56 p. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. V-3-V-60.
- Sanyal, S.K., 1981, Estimation of steam saturation and rock alteration from geothermal well logs-A theoretical inquiry: Geothermal Resources Council, Transactions, v. 5, p. 373-376.
- Sanyal, S.K., Che, M., Dunlap, R.E. and Twichell, M.K., 1982, Theoretical nuclear log responses of the components of the Geysers geothermal reservoir, California: Geothermal Resources Council Transactions, v. 6, p. 165-168.

- Sanyal, S.K., Che, M., Dunlap, R.E. and Twichell, M.K., 1982, Qualitative patterns on geophysical well logs from the Geysers, California: Geothermal Resources Council Transactions, v. 6, p. 313-316.
- Sanyal, S.K. and Jusbasche, J.M., 1979, Calculation of geothermal water salinity from well logs--A statistical approach: Geothermal Resources Council Transactions, v. 3, September, p. 613-616.
- Sanyal, S.K., Wells, L.E., Bickham, R.E., 1980, Geothermal well log interpretation state of the art--Final report: Los Alamos Scientific Laboratory, Report LA-8211-MS, 330 p.
- Sanyal, S.K., Wells, L.E. and Mathews, M., 1979, Classification of geothermal reservoirs from the viewpoint of log analysis, in 20th annual logging symposium transactions, paper HH: Houston, Society of Professional Well Log Analysts, 20 p. Reprinted in 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, p. II-3-II-22.
- Seamount, D.T., Jr. and Elders, W.A., 1982, Use of wireline logs at Cerro Prieto in the identification of the distribution of hydrothermally altered zones and dike locations and their correlation with reservoir temperatures, in 3rd symposium on the Cerro Prieto Geothermal Field, Baja California, Mexico, [1981], proceedings: Lawrence Berkeley Laboratory, Report LBL-11967 (DOE Report CONF-810399), p. 123-133.
- Silva, P. and Bassiouni, Z, 1981, Accurate determination of geopressured acquifer salinity from the SP log, in D.G. Bebout and A.L. Bachman, eds., 5th conference on geopressured-geothermal energy, proceedings: Baton Rouge, Louisiana State University, p. 193-196. Also published in 1981, Geothermal Resources Council Transactions, v. 5, p. 737-740.
- Society of Professional Well Log Analysts, 1982, Geothermal log interpretation handbook: Houston, Society of Professional Well Log Analysts, variously paginated. Contains discussion of interpretation techniques, 17 reprints of significant papers and a comprehensive bibliography.
- Stefansson, V. and Steingrimsson, B., 1980, Geothermal logging I--An introduction to techniques and interpretation: Reykjavik, National Research Council of Iceland, Scientific and Technical Information Service, Report OS80017/JHD09, 117 p.
- Wright, P.M., Ward, S.H., Ross, H.P. and West, R.C., 1985, State of the art geophysical exploration for geothermal resources: Geophysics, v. 50(12), p. 2666-2696.



