

# Résumé – Database and Computer Experience

## **CHARLES E. CORRY**

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### **SUMMARY**

- **Data architect** for a Fortune 500 company; one of world's premier research institutions; ballistic missile defense at the Joint National Test Facility, and three dot.com Web sites.
- **Database design and development** using Sybase and Oracle for World Ocean Circulation Experiment; public utilities; missile defense, and three dot.com Web sites.
- **Data warehousing experience** at AMAX, Univ. of Missouri-Rolla, WOCE, IBM, & TCI.
- **Creativity** and ability to carry jobs to completion demonstrated by numerous publications and extensive honors. *My work is internationally recognized.*
- **Documentation and report generation**, with integration of *FrameMaker* documents and relational databases.
- **Database CASE and monitoring tools** used include PowerDesigner, Oracle Designer, ERwin, PowerBuilder, OmniConnect, DirectConnect, SQL Monitor, etc.
- **Network and Internet** executive integration systems (*EIS*). Web design and linkage with WWW and databases using Vignette. Played primary role in the design of one of the *first 100 Web sites*. That work can be seen at [www.cms.udel.edu](http://www.cms.udel.edu) under *WOCE*. Later work is at [www.zonge.com](http://www.zonge.com) under *Ore Minerals*. Extensive *EIS* experience at IBM as well.
- **Nine years** of diverse and innovative international *project management* experience.
- **Ten years** database *design, data modeling, and development*, including table structures, data relationships and referential integrity, documentation, and dictionary development.
- **Twenty years** of mathematical, statistical, engineering, and numerical modeling experience and education including information system projects, database design and administration, systems analysis, logistics, and programming.
- **Seven years** database administration on VAX/VMS, Sun/Unix/X Windows, Motif, AIX, SGI-IRIX, and HP-UX using Sybase System 4, 10, 11, and 11.5 and Oracle 8 including:
  - Design and maintenance of databases with *extensive* use of *triggers* and *referential integrity constraints* both within and across databases for Sybase and Oracle.
  - Design, development of extensive *stored procedures* and *views* for Sybase and Oracle.
  - Legacy data migration* from other databases, e.g., DB2, to Sybase including *Omni-Adaptive Server*, and *DirectConnect*, translation tables, training, stored procedures, automated data input, transfer, and retrieval scripts for both VMS and UNIX.
  - Disk layout and mapping, mirroring*, and replicate servers for Sybase and Oracle.
  - Performance and tuning* for System 10, 11, and Adaptive Server.
  - Database security, integrity, and disaster recovery.*
  - Data migration from Sybase System 4 to System 10 and from System 10 to 11.

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### **EDUCATION**

- Ph.D.**, *Geophysics*, Texas A&M University, 1976, Dissertation: The emplacement and growth of laccoliths. *Graduate of the Center for Tectonophysics.*
- M.S.**, *Geophysics*, University of Utah, 1972, Thesis: The origin of the Solitario, Trans-Pecos Texas. Minor: *Computer Science.*
- B.S.**, *Geology*, Utah State University, 1970. Minors: *Physics and Electronic Engineering.*

## EMPLOYMENT HISTORY

**President, Equal Justice Foundation, Colorado Springs, CO 2001-present**

**Consultant, Database Administration, Denver, Colorado Springs, CO, August, 1995-2001.**

- Data modeling and database design (US West, IBM, TCI, Digital Globe, Health Decisions, Ballistic Missile Defense at Joint National Test Facility {JNTF}, and Concero {FoxNews.com}).
- Data architecture and data warehousing with Sybase and Oracle (TCI, IBM, JNTF, Concero).
- Designing backend databases for Vignette Story Server (three projects for Concero).
- SmartStream financial databases (Cyprus Amax and Digital Globe).
- Triggers, stored procedures, and views using Sybase and Oracle (US West, IBM, TCI, JNTF, Concero).
- System upgrades from System 10 to 11 and Adaptive Server and HP-UX 9.x to 10.x and 11.9.x (IBM).
- Performance and tuning (US West, IBM, TCI, Cyprus Amax, IBM, Digital Globe, Health Decisions, and Concero).
- Legacy data migration (US West, IBM, Digital Globe, and Concero).
- Security, referential, data integrity (US West, TCI, Cyprus Amax, IBM, Digital Globe, JNTF, Concero).
- Remote servers, Open Client, and API integration with stored procedures (US West).
- Documentation and report generation (US West, IBM, TCI, Digital Globe, JNTF, and Concero).
- Disaster recovery, backup and restore procedures (Cyprus Amax, IBM, Digital Globe, and Concero).
- Extensive Korn shell scripts, UNIX administration (Cyprus Amax, IBM, Digital Globe, and Concero).
- DirectConnect gateways, and OmniConnect servers between DB2 and Sybase servers (IBM).

**Coordinator, World Ocean Circulation Experiment (WOCE) Hydrographic Programme Office (WHPO), Woods Hole Oceanographic Institution, Woods Hole, MA, 1990-July, 1995.**

WOCE was far and away the largest oceanographic program ever undertaken in order to map the global ocean and provide baseline data for decadal and longer climate variations. I worked on diverse projects with more than 30 countries, and people at more than 100 organizations around the globe. An essential component of my work was developing *data warehousing* methods in cooperation with the US National Oceanographic Data Center and World Data Centers to preserve, and make globally accessible via the Internet and, later, the World Wide Web, the myriad measurements made during the field program. Within the WHPO I was responsible for coordinating, maintaining, and quality controlling the data for the international WHP field program including data from roughly 600 cruises around the world.

As *database architect*, a variety of databases, both relational and hierarchical, were evaluated for suitability. Sybase stood out among the candidates and was adopted as the Institution-wide database engine.

- In order to standardize the data from such a vast global program, I developed and distributed technical information on appropriate methods for calibration, sampling and analysis; maintained and published an index of sampling requirements and standards (see significant reports); monitored the progress of the program and quality control of data as it progressed through various stages. Without such standardization, development of a relational database would have been impossible.
- As virtually a solo effort, I did the *data modeling* and *database design* of the extremely complex spatial and temporal relationships required for a database to contain the global hydrographic data and metadata produced by the WOCE program. The design required extensive development of triggers and integration of referential integrity constraints. Sybase's Deft CASE tool was used to aid the design effort.
- I acted as system administrator for the Sybase relational database used for the WOCE hydrographic data. Initially the database was installed on a VAX/VMS system using version 4.x, and later migrated to System 10 on a Sun Sparc 10 Unix OS. Performance and tuning, database security and integrity, mirroring and initial development of a replicate server were integral with that effort. Extensive development of stored procedures and migration of legacy data were also required.
- In early 1993 the database was integrated as an executive information system (EIS) on the Worldwide Web (WWW) in conjunction with the WOCE Data Information Unit, and is viewable at URL [woce.nodc.noaa.gov/wdiu](http://woce.nodc.noaa.gov/wdiu) under the WOCE hydrographic program. We also published cruise and data reports distributed to the international community both by print and electronic media (see Web site).
- Extensive experience in global oceanography, collection and analysis of hydrographic and geophysical data, communication experience, quantitative data display, electronic publishing, and presentation of written and oral reports to a variety of international committees were essential in my position.

**Associate Professor of Geophysics, University of Missouri at Rolla, 1984-1989.**

See courses taught and publications for details.

**Visiting and Adjunct Associate Professor of Geophysics, Texas A&M University, 1983-1987.**

Research on spontaneous polarization and ferroelectric ore minerals. Also taught field geology and exploration geophysics courses.

**EMPLOYMENT HISTORY (continued)*****Vice President, Nonlinear Analysis, Inc., Bryan, Texas, 1982-1984.***

Formed independent consulting firm with Dr. Walter E. Haisler, now Chair of the Dept. of Aerospace Engineering, Texas A&M Univ., to market our nonlinear finite element program, MAGGIE. The program was operational on CDC Cybernet, under license to Cray Research, and available and operational on DEC, IBM, Amdahl, and CDC computers, and used MOVIE.BYU for graphic display of the output.

***Manager of Geophysical Research, AMAX, Golden, CO, 1977-1982.***

Responsible for the development of more effective geophysical techniques for use in mining exploration. That responsibility was carried out by the successful development and testing of four techniques:

- Remote sensing for regional exploration with LANDSAT imagery processed on an ESL IDIMS system. As part of GEOSAT, aircraft imagery of known mineral deposits was analyzed in cooperation with JPL.
- On a regional level, gravity surveys of the Colorado Mineral Belt and selected areas of Nevada were successful in defining areas for more detailed geochemical and geophysical investigation.
- On the district exploration level, the self potential method was found to be a fast, economical, and reliable reconnaissance technique. In excess of 3000 line/km of self potential data were run over known deposits and sulfide prospects in the western U.S., and a number of prospects were discovered during the SP reconnaissance. The results of this program changed a scientific paradigm for this method that dated from 1829 (see publications on self-potential method).
- The controlled source audiomagnetotelluric (CSAMT) method, now a primary exploration method for sulfides, was developed in conjunction with Zonge Engineering and Research Organization of Tucson for detailed surveys of individual prospects. Beginning in 1978, the CSAMT technique was tested over known deposits. Field techniques, equipment, and data analysis were refined and improved as experience dictated, until in 1981 the technique became a commercially available service through Zonge Engineering, and later through other contractors. The CSAMT project led to fundamentally changing our understanding of the physical mechanism responsible for electrical anomalies associated with sulfides (see publications on ferroelectricity and URL <http://www.zonge.com> under *Ore Minerals*).

Because of the success of the research and development effort, and to bridge the transition from R&D to commercial use, the last two years of the program encompassed an extensive geophysical exploration program. The entire program was carried on with an in-house staff composed of myself, two other degreed geophysicists, a technician, three to five summer hands, and three to five geophysical contractors who each employed from 2 to sometimes as many as 30 people on my projects.

An extensive engineering geophysical program was also carried out during the course of the program. That effort included a high resolution reflection seismic survey for tunnel site, slim hole logging in ~50 drill holes, rock properties, and use of the MAGGIE finite element program for mine modeling.

To support the geophysical effort, an extensive program to upgrade and improve the computer facilities, particularly graphics, was attempted. The effort included preliminary development of a corporate database management system, and acquisition of a variety of computer graphics facilities. Before the project was cancelled due to falling metal prices the database portion included:

- As a *database architect*, a variety of databases, both relational and hierarchical, were evaluated.
- *Data modeling* and initial *database design* was done.
- *Data warehousing* with such digital data libraries as the Defense Mapping Agency Gravity Library.

***Research Associate, Woods Hole Oceanographic Institution, Woods Hole, MA, 1968.***

I was asked to go to Woods Hole as a result of inventing a method for measuring the borehole temperature in front of an advancing drill bit in conjunction with the coring process during deep sea drilling operations. My duties at WHOI during this appointment were similar to those at Scripps.

***Research Associate, Scripps Institution of Oceanography, San Diego, CA, 1965-1968.***

Employed as research project manager from 1965 to 1969, with the exception of a six month leave described above. Duties involved development, testing, calibration, operation, personnel training, data reduction and analysis for various projects primarily concerned with the measurement of terrestrial heat flow. Other duties involved the design of high pressure instrument cases, remote sensing and recording of various physical properties, and high reliability design in hostile environments. Additional details are available from the publications. This work was fundamental in the development and testing of plate tectonics theory.

***Electronic Missile Checkout, GD/Astronautics, San Diego, CA, 1960-1964.***

Employed in preflight checkout of Atlas, including Project Mercury and the Standardized Space Launch Vehicles, which are still in use, as well as Centaur missiles. Duties involved preflight testing, calibration, and performance evaluation of the various missile systems. In addition, design and design evaluation, failure analysis and reliability evaluation, and technical procedure writing were done incidental to the main duties. Broad experience was gained with radio and landline telemetry, missile instrumentation systems, missile flight control, radio and inertial guidance, pneumatic and hydraulic servo-systems, and missile propulsion.

***Ground Radio Technician, U.S. Marine Corps, 1956-1959***

Primarily with 2<sup>nd</sup> Battalion, 1<sup>st</sup> Marines. USMC Reserves 1955 to 1956 and 1959 to 1963.

## COMPUTER EXPERIENCE

### Hardware

<u>Manufacturer</u>	<u>Platforms</u>	<u>Operating Systems</u>
Apple	PowerMac 8100/100, IlicMac	OS 8.1
Digital Equipment	DEC-20, VAX	TOPS-20, VMS, Sybase
Sun	Sparc 5,10, 250, 450	Unix (Solaris & CDE), Sybase, X Windows
Hewlett Packard	9000	UX 9 & 10, Sybase, X Windows, DCE
Silicon Graphics	Indy and up	IRIX 5.3
IBM and Amdahl	360, 370, 3000, 4000 series	JCL, VM, CMS, AIX, PC750-P90, RISC 6000OS/2 Warp, Windows 3.1, Windows 95, NT
Control Data	176, 825	NOS
Apollo	4000 and 10000 series	AEGIS and DOMAIN
Univac	1108	

### Databases

Sybase 4, System 10 and 11, Adaptive Server (11.9.2), OmniConnect, and DirectConnect), D&B SmartStream, Oracle 8, Empress, DRS, DEC RDBMS.

### Database CASE tools, Hypertext, GIS, Computer Graphics (two- and three-dimensional)

Sybase PowerDesigner (7.02) and PowerBuilder, Oracle Designer 2000, ERwin, Web design with Mosaic, Netscape, and WebMaker; Claris Draw, MOVIE.BYU, Radian CP-1, Tektronix, and CalComp, IDIMS and ELAS imaging programs.

### Computer Languages

SQL including Sybase Transact-SQL, HTML, FORTRAN, Basic, Think C for Macintosh. Spreadsheets such as Lotus 1-2-3, Excel, and Works. A variety of analog and digital simulation languages for numerical modeling, e.g., MAGGIE, LISP, etc.

### Web and Computer Publishing, and Word Processing Experience

Vignette Story Server, FrameMaker 5 (from v. 2), WebMaker, T<sub>E</sub>X and L<sup>A</sup>T<sub>E</sub>X, IBM and Univ. of Waterloo Script, IBM GML, Microsoft Word 97 (from v. 4) and Works 4 (from v. 2), WordPerfect 3.

### Major FORTRAN Programs

*GRIDS*, 1973-1977, a program to interpolate randomly distributed three-dimensional data in order to obtain a uniformly spaced data set (gridding).

*MAPLOT*, 1977-1980, a program to plot data, for which latitude and longitude are known, on to existing U.S.G.S. topographic maps or overlays.

*MAGGIE*, 1974-1987, a geometrically and materially nonlinear finite element program for static or dynamic analysis in one, two, or three dimensions.

## BACKGROUND

### Databases and Graphical Display Industrial Courses

Digital Equipment Corporation, RDBMS  
 Institute for Graphic Communication, Three-Dimensional Display Techniques  
 Radian Corp., CPS-1 Computer Contouring  
 SYBASE, Transact-SQL  
 SYBASE, System 10 — System and Database Administration

### Solid Earth Geophysics Graduate Coursework      Tectonophysics Graduate Coursework

Potential field theory	Finite element analysis
Engineering statistics	Continuum mechanics
Geostatistics	Computer simulation of physical systems
Electrical methods	Fracture theory

## UNIVERSITY COURSES TAUGHT

Digital Data Analysis	Geodynamics
Exploration for Sulfides	Potential Field Theory
Marine Geology	Gravity and Magnetic Methods
Marine Geophysics	Electrical Methods in Geophysics
Optical Mineralogy	Mining and Engineering Geophysics
Geology Field Camp (UMR and TAMU)	Exploration Geophysics

## PUBLICATIONS

### Monographs

- Corry, C. E., 1988, *Laccoliths, mechanics of emplacement and growth*: Geological Society of America, Special Paper 220, 110 p., 5 maps, 1 plate.
- Corry, C. E., Herrin, E., McDowell, F. W., and Phillips, K. A., 1990, *Geology of the Solitario, Trans-Pecos Texas*: Geological Society of America, Special Paper 250, 122 p., 4 maps (WHOI contribution 7592), discussion and reply in *Geological Society of America Bulletin*, 1994, v. 106, no. 4, p. 560-569 (WHOI contribution 8455).
- Corry, C. E., and others, *Domestic violence against men in Colorado, 2001-2009*, 2,100+ p., [www.dvmen.org](http://www.dvmen.org).

### Professional Papers

- Vacquier, V., Uyeda, S., Yasui, M., Sclater, J. G., Corry, C. E., and Watanabe, T., 1966, Heat flow measurements in the northwestern Pacific: *Bulletin of the Earthquake Research Institute, Tokyo*, v. 44, p. 1519-1535.
- Sclater, J. G. and Corry, C. E., 1967, Heat flow; Hawaiian area: *Journal of Geophysical Research*, v. 72, no. 14, p. 3711-3715.
- Vacquier, V., Sclater, J. G., and Corry, C. E., 1967, Heat flow, eastern Pacific: *Bulletin of the Earthquake Research Institute, Tokyo*, v. 45, p. 375-393.
- Corry, C. E., Dubois, C., and Vacquier, V., 1968, Instrument for measuring terrestrial heat flow through the ocean floor: *Journal of Marine Research*, v. 26, p. 165-177.
- Sclater, J. G., Corry, C. E., and Vacquier, V., 1969, The in situ measurement of the thermal conductivity of ocean floor sediments: *Journal of Geophysical Research*, v. 74, p. 1070-1081.
- Corry, C. E., 1985, Spontaneous polarization associated with porphyry sulfide mineralization: *Geophysics*, v. 50, no. 6, p. 1020-1034; also see discussion in v. 51, no. 5, p. 1153-1155.
- Bieniulis, M. Z., Corry, C. E., and Hoskins, E. R., 1987, Ferroelectricity in natural samples of chalcocite,  $\text{Cu}_2\text{S}$ : *Geophysical Research Letters*, v. 14, no. 2, p. 135-138.
- Corry, C. E., Emer, D., and Zonge, K. L., 1987, CSAMT surveys of porphyry sulfide deposits and prospects in the Cordillera of the US: *Proc., N. Am. Conf. on Tectonic Control of Ore Deposits Vert. and Horz. Extent of Ore Systems*, UMR, p. 204-213.
- Corry, C. E., Carlson, N. R., and Zonge, K. L., 1988, Case histories of controlled source audio-frequency magnetotelluric surveys: *Fifty-Eighth Annual Meeting, Society of Exploration Geophysicists, Expanded Abstracts*, v. 1, p. 415-418.
- Corry, C. E., 1989, Preliminary investigation of ferroelectric effects in sulfide deposits (abstract): *EOS, Transactions, American Geophysical Union*, v. 70, no. 15, p. 492.
- Corry, C. E., 1994, Investigation of ferroelectric effects in two sulfide deposits, *Journal of Applied Geophysics*, v. 32, p. 55-72 (WHOI contribution 8403, and see URL <http://www.zonge.com> under *Ore Minerals*).
- Corry, C. E., Stevens, J. B., and Herrin, E., 1994, Discussion of "A Laramide age push-up block: the structures and formation of the Terlingua-Solitario structural block, Big Bend region, Texas," by R. J. Erdlac in *Geol. Soc. Am. Bull.*, v. 102, no. 8, p. 1065-1076, discussion and reply, v. 106, no. 4, p. 553-559 (WHOI contribution 8456).
- Perry, J.W., Corry, C. E., and Madden, T. R., 1996, Monitoring leakage from underground storage tanks using spontaneous polarization (SP) method, *Society of Exploration Geophysicists, Sixty-Sixth Annual Meeting, Expanded Abstracts*, v. 1, p. 932-935.
- Corry, C. E., 1997, Discussion of "Magnetotelluric delineation of the Trillabelle massive sulfide body in Sudbury, Ontario" by D. Livelybrooks, M. Mareschal, E. Blais, and J. T. Smith, *Geophysics*, v. 61, no. 4, p. 971-986, discussion and reply, v. 62, no. 5, p. 1672-1673.
- Corry, C.E., and Fiebert, M., 2001, Controlling domestic violence against men, *Sixth International Conference on Family Violence, San Diego, California*, Sept. 8-12.
- Nyquist, J. E., and Corry, C. E., 2002, Self-potential: The ugly duckling of environmental geophysics, *The Leading Edge, Soc. Exploration Geophysicists, Tulsa*, v. 21, no. 5, p. 446-451.

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## **PUBLICATIONS (continued)**

### **Significant Reports**

- Corry, C. E., 1966, Heat flow manual: Marine Physical Laboratory, Scripps Institution of Oceanography, TM-187, San Diego, CA., 44 p.
- Chung, Y., Bell, M. L., Sclater, J. G., and Corry, C. E., 1969, Temperature data from the Pacific abyssal water: Scripps Institution of Oceanography Report No. 69-17, San Diego, CA, 75 p.
- Corry, C. E. and Sharp, T., 1969, Chino mine ground water resistivity survey - Stark and McCauley ranches, southwest of Hurley, New Mexico: Kennecott Exploration, Inc., Salt Lake City, Utah, 15 p., 6 maps.
- Corry, C. E., 1981, The role of the self potential method in the exploration for molybdenite: AMAX, Climax Molybdenum Co., Golden, CO, 53 p., 7 maps.
- Corry, C. E., DeMoulley, G., and Gerety, M., 1983, Field procedure manual for self potential surveys: Zonge Eng. and Res. Organization, Tucson, Arizona, 75 p., 1 map.
- Haisler, W. E. and Corry, C. E., 1984, MAGGIE, A materially and geometrically nonlinear finite element program for static and dynamic analysis of one, two, and three dimensional structures: Nonlinear Analysis, Inc., Bryan, Texas, 205 p.
- Corry, C. E. and Townsend, C., 1987, THESIS, A SCRIPT program to format theses and dissertations at University of Missouri - Rolla: UMR Computer Center, 75 p.
- Joyce, T. and Corry, C. (Editors), Rev. 1, 1991, Rev. 2, 1994, Requirements for WOCE hydrographic programme data reporting, WHPO 90-1, WOCE Report 67/91, 144 p.

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## **HONORS**

- Marquis Who's Who in the World, 16<sup>th</sup> through 27<sup>th</sup> Editions, 1999-2010.
- Marquis Who's Who in America, 53<sup>rd</sup> through 64<sup>th</sup> Editions, 1999-2010.
- Marquis Who's Who in Science and Engineering, 4<sup>th</sup> through 10<sup>th</sup> Editions, 1998-2009.
- Marquis Who's Who in the West, 27<sup>th</sup> through 35<sup>th</sup> Editions, 2000-2008.
- Strathmore's Who's Who, 1998-1999 and 2000-2001 Editions.
- 2000 Outstanding Scientists of the 20<sup>th</sup> Century, International Biographical Centre, Cambridge, England, p. 55, 2000.
- 2000 Outstanding Scientists of the 21<sup>th</sup> Century — First Edition, International Biographical Centre, Cambridge, England, 2001.

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## **SOCIETY MEMBERSHIPS**

- Fellow*, Geological Society of America
- American Geophysical Union
- Society of Exploration Geophysicists
- Institute of Electrical and Electronic Engineers (Voting equipment standards committee (2001-2009))
- Marine Corps League

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## **INTERESTS**

- Horseback riding, both professional and recreational purposes; longest horseback trip was 5 months duration over 1,000 miles through Utah, Arizona, and Colorado (see *corry.ws*)
- Camping and four-wheeling both professionally and for recreation.
- History and civil liberties.
- Intimate partner violence and related issues.

**REFERENCES**

Gary R. Garrison (Project lead for several projects I worked on at Concerro)  
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## Project Guiding Principles<sup>©</sup>

Charles E. Corry, Ph.D.

1. Define the problem *before* attempting to solve it.
2. Fix the problem, *not* the blame.
3. Use tools that help solve the problem rather than attempting to force the problem to fit the available tools.
4. Define the data model *before* attempting to develop tools to access the data. Conversely, it is impossible to know what should go into the model without understanding what you want out of it.
5. Data are of no value without metadata.
6. Document! Document! Document! Use common English instead of jargon and acronyms, though that has the disadvantage that others may be able to understand you.
7. Difficult as it may be, try to keep management and the Indians all headed in the same general direction.
8. Deadlines set exclusively by management will *never* be met. Get some feedback from the troops as to what is remotely possible before making blue sky promises.
9. Be prepared for earthquakes and other upheavals. They are a sure indicator of high stress levels and, if unrelieved, make catastrophes inevitable.
10. Integrate *all* the hardware, software, and team responsibilities at the *beginning* of the program.
11. Don't believe any more than 10% of any vendors promises, and be even more skeptical of your own. You are never in so much trouble as when you start to believe in your own infallibility.
12. Poor planning is *never* cause for declaring an emergency. However, it is commonly cause for reviewing project management.
13. Projects that give precedence to appearance over substance don't succeed.
14. My way likely isn't the best way. Your way probably isn't extraordinary, either. But some combination of both, plus a lot of factors neither one of us considered, is probably a pretty good solution of the problem. Murphy will have a few things to say as well.