

### *Qualifications Summary*

- Expert in the design and development of specialized software for scientific data acquisition, and processing
- Familiar with a wide range of traditional programming languages and tools as well as relational database technologies
- Experienced in integrating custom and commercial off-the-shelf software to develop data processing systems
- Familiar with a wide range of computer systems in both standalone and networked environments including both Windows and Unix/Linux operating systems
- Experienced in the analysis and interpretation as well as display of oceanographic and meteorological data

## **J. BRUCE ANDREWS, M.S., B.S.**

Oceanographic Data Specialist

### **Professional Affiliations**

American Geophysical Union  
Association for Computing Machinery  
Computer Society of IEEE  
Marine Technology Society  
Software Association of New Hampshire

### **Fields of Expertise**

Applications programming, system programming, systems integration, instrumentation software design, data analysis, data acquisition, data presentation and display, processing system design and implementation, physical oceanography, signal processing, numerical modeling.

### **Higher Education**

M.S., Ocean Engineering-Massachusetts Institute of Technology (MIT) (1969)  
B.S., Naval Architecture and Marine Engineering-Massachusetts Institute of Technology (1967)

### **Employment History**

1995-Present Woods Hole Group  
1986-1994 EG&G Washington Analytical Services Center, Inc.  
1986-1986 Oceanographic and Marine Computer Applications Consultant  
1972-1983 EG&G Environmental Consultants  
1970-1971 Massachusetts Institute of Technology (Research Staff Member)

## Key Projects

### **Integrated Real-Time Monitoring System (IRMS) for Cassia Platform Trinidad, BP Trinidad and Tobago – Software Specialist**

Designed and wrote PC application using LabWindows CVI to collect, display and archive Doppler current profile and directional surface wave data, as well as meteorological data. This application was implemented by adding display and data acquisition modules to the previous IRMS application, including a module to process the surface data. Hourly averages of selected data were transferred to the Woods Hole Group via FTP where a second IRMS made displays similar to those on the primary system available to any approved user with a web browser over the Internet.

### **Processing of Current Meter Data from Deep Water Mooring (ADCPTool) – Software Specialist**

Modified software for processing data collected by ADCP current meters deployed on deepwater moorings (originally developed by USGS for bottom mounted current meters). This software converts data in raw binary files to data in EPIC netCDF files, allowing for changes in instrument depth with mooring draw down due to currents.

### **Integrated Real-Time Monitoring System (IRMS) for Deep Water Drill Ship Global Santa Fe Jack Ryan – Software Specialist**

Designed and wrote PC application using LabWindows CVI to collect, display and archive Doppler current profile data from two instruments, meteorological, and ships heading data. This application was implemented by adding display and data acquisition modules to the previous IRMS application, including modules to use ships heading data to convert current and wind data measured relative to the ship to geographical coordinates. Data were also transmitted to the Woods Hole Group FTP site via the ship's Internet connection on a daily basis.

### **Integrated Real-Time Monitoring System (IRMS) for Deep Water Production Facility, Makassar Strait, Indonesia, Unocal Corporation – Software Specialist**

Designed and wrote PC application using LabWindows CVI to collect, display, and archive Doppler current profile data from two instruments, riser and platform tendon tension data, winch tension and line out data, meteorological, and GPS position data. This application was implemented by adding display and data acquisition modules to the previous IRMS application. Different datasets are collected and shared by two (soon to be three) PCs on different platforms. All the data is displayed on each primary PC as well as other secondary PCs on the local network.

### **Integrated Real-Time Monitoring System (IRMS) for Deep Water Rig, Makassar Strait, Indonesia, Unocal Corporation – Software Specialist**

Designed and wrote PC application using LabWindows CVI to collect, display and archive Doppler current profile data from two instruments, meteorological, and GPS position and heading data. This application was implemented by adding display and data acquisition modules to the previous IRMS application. The application was also modified to run on multiple PCs and share data over a network.

## **Key Projects (continued)**

### **Oceanographic and Meteorological Monitoring System, Nantucket Shoals, Massachusetts, Cape Wind Associates – Software Specialist**

Designed and wrote PC application using LabWindows CVI to collect, display, and archive Doppler current profile and directional wave data and meteorological data from multiple sensors on an offshore platform. Data is collected by a Woods Hole Group Sea Team Remote Measurement System and transmitted via radio to the base station PC where it is displayed and forwarded to a web site for public access.

### **Integrated Real-Time Monitoring System (IRMS) for Fourteen Foot Bank Lighthouse Station, Delaware Bay, University of Delaware – Software Specialist**

Designed and wrote PC application using LabWindows CVI to collect, display and archive Doppler current profile, meteorological, water temperature and conductivity, and system battery data. The system features multiple display screens configured from basic display modules. The data acquisition functions were also implemented in a highly modular fashion

### **Real-Time Monitoring System for Clam Dredge, National Marine Fisheries – Software Specialist**

Designed and wrote PC application using LabWindows CVI to collect, display and archive depth, water temperature, and operational parameters for a clam dredge. The PC application communicated by radio to instrumentation on the clam dredge to begin data collection before the dredge was deployed and download collected data after the dredge was retrieved. The application also provided for display and archiving of data.

### **Deep Water Rig Instrumentation System, Makassar Strait, Indonesia, Unocal Corporation - Software Specialist**

Designed and wrote PC application using LabWindows CVI to Key Projects collect, display, and archive Doppler current profile data from two instruments, as well as wave, meteorological, and rig position data. The application features multiple windows with three different formats for both real-time and historical data display. The software design is the beginning of a modular system, which will allow maximum re-use in similar applications.

### **Deep-Water Rig Instrumentation System, Andaman Sea, West of Thailand, Unocal Corporation - Software Specialist.**

Designed and wrote PC application using Visual Basic to collect, display, and archive Doppler current profile data from two instruments in real-time.

### **Near-Shore Data Collection System, Martin County, Stuart, FL, Martin County Board of County Commissioners - Software Specialist**

Designed and wrote PC base station application using Visual Basic to collect, display, and archive oceanographic data in near real-time.

## **Key Projects (continued)**

### **Met-Ocean System, Netherlands Antilles, Curacao Port Authority - Software Specialist**

Designed and wrote PC base station and remote station applications using Visual Basic to collect, display, and archive current meter data in near real-time.

### **KOMET, Seoul, Korea, University of Seoul - Software Specialist**

Designed and wrote PC base station software application using CA Realizer to collect, display, and transfer to a network database and web server oceanographic and meteorological data in near real-time.

### **Lake Current Monitoring System, Toronto, Canada, Ontario Hydro - Software Specialist**

Designed and wrote PC base station application using CA Realizer to display Doppler current profiler data in several graphical and tabular formats, as received in near real-time via telephone modem.

### **Deep-Water Rig Instrumentation System, Gulf of Mexico, Texaco Inc. - Software Specialist**

Developed procedure for processing ocean current measurements from a Doppler current profiler using custom AWK scripts and Windows 3.1 software such as Grapher and Surfer with OLE Automation to generate displays for final reports.

### **Aanderra Instruments, Burlington, MA - Software Specialist**

Designed and wrote prototype Windows 3.1 software for processing and analyzing ocean wave measurements from a pressure recorder using Visual Basic.

### **EdgeTec, Boston, MA - Software Specialist**

Documented and upgraded real-time software for displaying and recording sidescan sonar data.

### **Cooling Water Discharge Plume Study, Pilgrim Nuclear Power Station, Boston Edison Co. - Software Specialist**

Processed and analyzed measurements of the cooling water discharge plume from a nuclear power station to produce publication quality time series and contour plots of discharge plume temperatures.

### **R/V Nathaniel B. Palmer, Washington, DC, National Science Foundation - Software Specialist**

Specification, installation, and testing of network and applications software for an oceanographic research vessel, including Novell NetWare server with NetWare for the Macintosh and NetWare NFS, UNIX workstations with TCP/IP connectivity, and X-Window support on MS-DOS personal computers.

### **Environmental Data Acquisition System III, Houston, TX, Texaco Corporation - Software Engineer**

Designed an oceanographic and meteorological data acquisition system, which has been deployed on several drilling rigs in the Gulf of Mexico.

## Key Projects (continued)

### **Northern California Measurement and Analysis Effort Focused on Currents Offshore Northern California, U.S. Department of the Interior, Pacific Region OCS Office, Los Angeles, CA, Minerals Management Service - Data Manager**

Supervise the processing quality, determination, and display of oceanographic data; acquisition of pertinent data from other sources; and transmittal of data to EDIS.

### **Program to Measure Sea floor Motion in the Gulf of Mexico, TX, Exxon Production Research - Project Scientist**

In this study, acoustic transponders were placed on the ocean bottom and their relative positions were determined at intervals of several months by acoustic ranging.

### **Internal R & D Project, Waltham, MA, EG&G - Co-inventor**

Patented mathematical and operational procedure for using acoustic ranging to recover absolute position when a high-precision radio navigation system of the phase measurement type loses lane count.

### **New England Outer Continental Shelf Physical Oceanography Program, U.S. Department of the Interior, Reston, VA, Mineral Management Service (MMS) - Data Manager**

Supervise the processing quality, determination, and display of oceanographic data; acquisition of pertinent data from other sources; and transmittal of data to EDIS.

### **Study to Model Cyclone-Generated Currents and Storm Surges on the Continental Shelf off NW Australia, Perth, Australia, Woodside Petroleum Development Pty. Ltd. - Analyst/Programmer**

Project to implement a computer model of wind driven currents and develop a model of wave generated currents for the continental shelf off northwestern Australia.

### **Huntsville, AL, NASA - Analyst/Programmer**

Project to developed computer models of heat transfer, stress, and metal movement during welding.

## Publications and Presentations

Magnell, B.A., S.L. Spiegel, R.I. Scarlet, and J.B. Andrews. 1980. "The Relationship of Tidal and Low-Frequency Currents on the North Slope of Georges Bank." *J. Phys. Oceanography*, Vol. 10, pp. 1200-1204.

Scarlet, R.I., B.A. Magnell, D.E. Frye, C.N. Flagg, and J.B. Andrews. 1979. "Physical Oceanography of Georges Bank." Annual Spring Meeting of the American Geophysical Union, Washington, D.C.

Andrews, J.B. and V.S. Jordan. 1977. "Using a CTD in Coastal Oceanography." Fourth STD/Ocean Systems Conf. Plessey Environmental Systems. San Diego, CA.

**Publications and Presentations (continued)**

Andrews, J.B. and B.A. Magnell. 1975. "Observations of Nearshore Upwelling and Downwelling." Presented before the 1975 Spring Meeting of the American Geophysical Union.

Andrews, J.B. and D.E. Cummings. 1972. "A Design Procedure for Large Hub Propellers." *J. Ship Res.*