



RANDALL J. PATTON

Scientific R&D Consulting

I am a retired professional physical scientist with a career in research and development for a private company (26 years). My expertise includes

Proposal writing Project technical support Project management Marketing

As a consultant, I can support both short and longer term commitments, a flexible schedule and reasonable travel, including on a regular basis locally (LA area) and for field test support.

Career overview

Sr. Research Scientist/Program Manager: Applied Signal Technology, Inc (AST)*

- November 1981 to May 2008

Program Manager/Principal Investigator on range of projects

- Multiple classified government-sponsored Non-Acoustic Anti-Submarine Warfare (NAASW) technology programs.
- Ocean optics instrumentation
- Physical-statistical simulation development and application
- Algorithm development for detection processing and system analysis
- Software development, implementation and testing

Won several proposals for Small Business Innovative Research (SBIR) projects involving ocean instrumentation and advanced surveillance algorithms. Participated in multiple field trials from the Arctic to the Equator; SCUBA certified.

Top Secret Clearance/SCI

Education

M.S.	Physical Oceanography	Massachusetts Institute of Technology	1981
B.A.	Applied Mathematics	University of California, Berkeley	1976

Personal

Retired in Los Angeles area. Activities include tutoring (calculus, statistics, physics) and volunteering as an Advanced Mathematics Expert on All Experts website. Intermediate German.

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* Formerly Dynamics Technology, Inc.

Work Experience

High resolution Synthetic Aperture Sonar (SAS) development and testing (2007-2008)

- *Program management and technical support for AST's Towed SAS (TSAS) IR&D*
- *Multiple field trials: Buzzards Bay (New Bedford), Georges Bank, Kings Bay, Baltimore Harbor*

Ballistic Missile Defense (BMD) proposal development (2004-2008)

- *Subcontract lead to prime contractor*
- *Technology evaluation, systems engineering for boost, mid-course and terminal stage concepts*
- *Presentation materials, proposal section write-ups*

Landmine detection system development (DARPA) (2003-2006)

- *Laboratory development and testing of laser-based prototype detection system*
- *Deployment and testing of field system using acoustic sources*
- *MATLAB-based analysis suite*

Guidance algorithm development for a major classified surveillance system (2000-2004)

- *IPT Lead; Subcontractor to prime*
- *Physics and control theory based algorithms for automated multiple-component system operations*
- *Complete testing of algorithms using full system simulation*
- *System now operational*

Detection of covert ship operations (1997-2001)

- *Phase I & II SBIR (Office of Naval Research)*
- *Development of non-matched filter based detection of anomalous ship tracks*
- *Design and software development of cluster-based probability map*
- *Tested using LA freeway traffic data and actual ship tracks (Kernel Blitz off Camp Pendleton)*
- *Successful concept was further developed to become AST's Automated Anomaly Detection Processor (AADP)*

Ocean Biosensor concept development (1995-1999)

- *Office of Naval Research (ONR)*
- *Analysis of sampling and deployment tactics for ultra-high sensitivity instrument*
- *Signal predictions and detection analysis*

Moored Optical Particle Size and Settling measurement (1992-1995)

- *Phase I and II SBIR (Department of Energy)*
- *Prototype design, fabrication and testing of ocean instrument*
- *Scatterometer and shadow graph components to measure particle sizes 2-20,000 microns*
- *Optical, mechanical and flow testing in laboratory*
- *Field deployments (including SCUBA) off Catalina (Southern CA)*

Ocean sensors (1989-1992)

- *Expendable Bathypotometer (bioluminescence measurements); Phase I SBIR (ONR)*
- *Particle size measurements using reticles; Phase I SBIR (ONR)*
- *Bathypotometer design support and data analysis (UC Santa Barbara; NAVOCEANO)*
- *Combined ocean scattering & transmission sensor (IR&D); White Paper*

Ship wake detection by Synthetic Aperture Radar (SAR) (1988-1999)

- *Physics and statistical modeling of SAR ship wake imagery*
- *Signal and clutter models*
- *Utilized end-to-end SAR simulation for development and testing*

Ocean bioluminescence studies for major Navy program (1988-1994)

- *Modeling of source-to-sensor transfer function for underwater targets*
- *Modeling of mechanical light generation process*
- *Analysis of ocean and laboratory data*
- *Field test support*

Measurement of vibrations in arctic ice floes (1986-1989)

- *DARPA-funded*
- *Physics modeling, data analysis and detection processing*
- *Field operations: Geophone deployment and data collection (ICEX 1987)*
 - o *5 week deployment at 80+ degrees North latitude*

Analysis of ocean features using towed thermistor chain measurements (1982-1990)

- *Navy programs*
- *Statistical-physical modeling of ocean processes*
- *Ocean data analysis*
- *Detection algorithm design and testing*
- *Software development*
- *Tactics simulation*
- *Field test support*

Turbulent flow measurements using a Hydro-resistance Anemometer (1982)

- *Laboratory measurements*
- *Software development*
- *Data analysis*

Graduate school (MIT-Woods Hole Joint Program)

- *6 week field test in equatorial Indian Ocean*
- *Full depth vertical profiling of currents, water properties*