

RESUME for Robert D. ("Bob") ANDREW
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Professional [work history](#) by **Function in Year order**, categorized by A) [Process/Materials Engineering](#), B) [Safety-Health-Environment](#), C) [Info. Tech.](#) & D) [Teaching](#). Lastly professional [Affiliations](#), [Security](#), [Education](#), [Publications](#) & [Licensing](#).

PROFESSIONAL PROFILE

[Bob Andrew](#) is a consultant, educator, team lead & mentor, with decades of experience in process plant design, startup, operation, optimization, environmental stewardship and Information solution toolsets. He's an experienced project team leader in implementing workflow and spatial solutions plus skilled in management of change, issues, knowledge and risk. He integrates IT & business processes to deploy analysis, modeling, spatial, workflow, web services, database solutions.

CHRONOLOGICAL WORK HISTORY (see www.BobAndrew.info/career.htm on personal website)

- **Ingenious, Inc.** Process Engineering Manager onsite at Shaw Stone & Webster for major refinery expansion projects: "S-Zorb" gasoline desulfurization unit for Giant Yorktown; Distillate Hydrotreater and Hydrocracker units for Marathon.
- **Western Washington U:** 2006 Adjunct at "Huxley College of the Environment", teaching Planning and Advanced GIS
- **I-T Network:** 4Q05-1Q06 assigned to BP Cherry Point's 250,000 BPD *Canadian eXtra Heavy Oil* Select Stage studies
- **CSC / DynCorp:** 2003-3Q05 Technology Consultant at CSC. 2001-02 contracted as GIS Team Lead at ICF Consulting. 1998-2003 System Architect at DynCorp, now CSC. (2002-04 also an Adjunct *Researcher-in-Residence*, American U.)
- **Mobil Corporation:** 1995-97 EHS Integration Consultant. 1992-95 Environmental Research Leader Mobil R&D, 1990-92 Process Systems Group Leader Mobil R&D. 1985-90 Technical Applications Supervisor at N.Z. SynFuel (Mobil affiliate).
- **University of Auckland:** 1983-1985 Senior Lecturer to 4th Year Chem. Engineering Design, 3rd Year Process Analysis
- **Forster-Morrell Engineering**, Colorado Springs: 1981-1982 Senior Engineer (DoD/DoE Energy Conservation projects)
- **PetroMAS Eng'rg:** 1980-81 Computer Services Supervisor, 1977-80 Sr. Process Engineer, 1974-77 Process Engineer

AREAS OF FUNCTIONAL EXPERTISE, Listed Chronologically

A) PROCESS ENGINEERING (see process web-links in table at www.BobAndrew.info/projects.htm)

- 2006-07 Process systems design of process units, off-sites, utilities & HSE systems on Shaw, Stone & Webster projects including fire protection, blowdown, cooling and flare systems, tie-in interfaces and HAZOP of licensed FEED packages.
- 2005-06 member in IPA-quality *Select Phase* process package for revamp of BP Cherry Point to handle Canadian XHO; developed hydrogen plant Merchant/Licensors packages, Calciner SO₂ & NO_x analysis for BACT, and task automation.
- 1991-1992 Initial design phase of \$10 million Mobil European 3-refinery "PROMIS" project for plant & lab performance, reporting, graph, and data access to one-minute data from DCS for process diagnosis and troubleshooting.
- 1990: Co-author and analyst of failure causes in \$20 million reformer equipment damage/downtime: presented to AIChE
- 1986-87: Achieved a 9% increase over design capacity of twin 2,000 ton/day methanol units (largest global production)
- Conducted performance testing of NZ SynFuel off-sites & facilities units as formal contractual acceptance from Bechtel.
- 1990-1992: Deployed Mobil's portable "MAPS" software to estimate product yields from limited crude oil assay data; able to calculate value of "spot" supertanker load purchases. During 1992 Iraq war, trained staff worldwide in three weeks!
- 1991-1995: Simulating refinery processes with SimSci's "PRO/II", with particular expertise in physical property selection
- 1987-1989: Tuned "ASPEN" methanol process simulation models to plant data for optimization, accurate product yield.
- 1987-1989: ACSL dynamic models for steam system control settings for safer, reliable responses to process upsets
- 1982: "Energy Audit" analyses/solutions for a Colorado Springs team, on big research, commercial and military facilities.
- 1974 - 1982: performed crude oil refinery simulation for revamps, developed unit process equipment/line specifications, P&ID's, Heat & Mat'l Balances. Did instrument loop commissioning, refinery startups and control panel operator training.
- 1978-80 Process design and startup of major expansion to 25,000 BPSD Ergon Refining's Vicksburg, MS refinery, plus R&D on stable "coal-oil mixture" technology for pipelining coal suspended in residual oil to Mississippi Power and Light.

- 1976-77 Design/startup of modifications at Gladieux Refining under Old Oil / New Oil opportunities, seen as short-term. Process assessment of impact on crude column, overhead systems, pumparounds, with switch from sweet light crude.
- 1974-75 Process upgrade/commissioning of Gladieux Refinery in Fort Wayne, IN to meet military jet fuel specifications
- 1970-1971 Analysis (for Ph.D.) of NZ batch steelmaking with objective of reducing decision time for additive adjustments
- 1968: Optimized cleaning-cycle of Shell's lube unit by developing economics of outage duration vs. increased fouling.

B) Health, Safety and Environment (see HSE web-links in table at www.BobAndrew.info/projects.htm)

B1: PROCESS SAFETY ANALYSIS & TRAINING

- 2005: Evaluated the latest "PHA-PRO" release for consideration by consulting client, whether to adopt as their standard.
- 2000: Built "Expert Advisors" for OSHA, to aid specific small business types with plain language regulatory applicability.
- 1997: Evaluated "TapRoof" for global adoption across Mobil Exploration & Production, Refining and Chemical Divisions.
- 1996: As part of "Mobil U", evaluated and tested Mockingbird's suite of HazComm tools including how to read P&IDs etc
- 1993: Taught Pertamina staff how to use the suite of HAZOP, QRA, blast and fire analysis tools used then at Mobil R&D.
- 1983-1985: Taught junior and senior year students in process risk assessment, based on Professor Trevor Kletz work on Process Safety and Loss Prevention, including "Inherently Safer Design", HAZOP, and "Quantitative Risk Assessment".

B2: OCCUPATIONAL HEALTH

- 1995-1997: Worked in the core Mobil *Global Professional Services* HQ team at Fairfax Willow Oaks, who consolidated Mobil EHS services across E&P, Transportation, Refining, Petrochemicals, Chemicals, Power, Marketing & Distribution.
- Reviewed Occupational Hygiene tools in use by Mobil, and documented recommended best practices within "GENIE"
- Ensured that Mobil Medical staff in GPS had access to latest SAS tools for analysis of patterns of employee exposure.

B3: ENVIRONMENTAL ENGINEERING

- 2004-2005: Retained as subject matter expert by EPA on P.E. role and responsibilities in revised SPCC rule proposal.
- 2002: Authored the "lessons learned" update of EPA's "Gas STAR" technical advisories for gas processing facilities.
- 1998: Developed ecological soil screening levels "extranet" for the USEPA with multi-country and industry workgroups
- 1996: Saved 40% on EHS publication services, made accessible to Mobil staff globally, by switching to on-line access.
- 1995: Produced a Seminar workbook plus customized full-text indexed search tool on diskette about refinery air quality MACT rules (Maximum Attainable Control Technology) for joint workshops by API/EPA published as API Publication 33.
- 1995: Planned and supervised "Electronic Exchange of Environmental Compliance Information" API Publication 4630.
- 1991-1995 Co-leader of Mobil R&D Corp's internal research and its collaborative research with PERF (the Petroleum Environmental Research Forum) on viable, economic process mods to reduce environment, health, ecological impacts.
- 1994: Co-chaired PERF's "Emission Inventory Applications of Refinery Stream Speciation Data" PERF Project 94-05.
- 1993-95: Chaired Refinery discussion group topic selections and R&D technology reviews at quarterly PERF meetings.
- 1992-2004: Chaired \$6 million, joint DOE/UCLA/Industry nation-wide research project on toxic combustion by-products. (Note the Final PERF 92-19 report formed a multi-industry basis for Clean Air Act proposals for fired heater air toxics).
- 1991: Lead 10-company PERF 91-14 collaborative project on process/treatment options to reduce desalter emulsions.
- 1983: Technology Assessment member on Governor's committee in Colorado to mitigate electronic industry wastes
- 1977: Conducted technical environmental audits for clients and specialty studies for the Texas Air Control Board
- 1974-1982: Designed petrochemical and refining wastewater treatment plants, bulk liquid handling and refrigerated storage chemical terminals and docks, specialty drumming facilities, and developed storage terminal master plans

C) Application of I.T. to Energy/Consulting Industry and Federal

C1: I.T. Applications for Energy & Consulting Industries (1974-1997, 2005-2006)

- 2005-2006: Trained engineers to use "eRTIS" to access "PI" data, WebBLISS lab analyses, Documentum for scanned docs & vector drawings. Streamlined engineering calculations in Excel, templates for Process/Lab/EHS data import.

- 1995-1997: Project Manager for \$1 million "GENIE" Global EHS Network Information Enabler. Designed architecture | of GENIE's menu suite for EHS Management Systems, Best Practices, Issues Management, and Risk Management.
- Then leveraged GENIE for "BestNet" (internal 100+ "best practices" networks) across Mobil's global operating divisions.
- 1998: GENIE was selected "best-in-class" Benchmarking Partners White Paper, presented as speaker at "Lotusphere"
- 1997: Deployed global Intranet web for Mobil EHS, accessible from all of Mobil, then supervised content management.
- 1997: Produced same-night, on-line "Risk Management Best Practices" internal meeting proceedings, including Q&A.
- 1997: Pioneered use of extranet sites at Mobil EHS using secure Lotus "Domino" access with strategic international industry partners: customers/suppliers like Korea Gas and Pertamina, international spill responders like BP and Shell.
- 1991-1993 Mobil R&D team developing on-line process advisories for optimum performance: I did standardized user interfaces, improved documentation, customized tuning services for specific sites/feedstocks, and technical transfer.
- 1987-1990: Lead 5 staff developing process engineering applications for analysis & troubleshooting of plant operations, labs, maintenance, engineering, economics & planning in NZ SynFuel \$1.2 billion complex (nat. gas-methanol-gasoline). Implemented plant-wide real-time process databases on mini-mainframe at NZ SynFuel via LAN, with graphical charts of one-minute DCS data with hourly/daily histories of process unit, product quality performance assessment and trends.
- 1982: Developed BASIC language applications for energy modeling of buildings to run on portable PDP-8 at client site
- 1974-1982: setup all the computing infrastructure at PetroMAS, including PC's, access to service Bureaus, and CADD. Developed BASIC language applications for air emission calculations, saved on time-share service bureau model runs

C2: Federal/State/Global I.T. Applications and Architecture (1998-2005)

Technology Consultant/System Architect for CSC under the 10-year EPA "*Infrastructure Technology Support*" contract.

- 2004: CSC's tech lead for the upgrade of Audiovisual and Videoconferencing of EPA's "Emergency Operations Center".
- 2003-2004 Designed downtown "*Geospatial Technology Center*" demo lab with knowledge portal for CSC Fed. Sector.
- 2003-2004 GIS strategy for CSC on technology sustenance, partnering with specialist firms and GIS bid preparation.
- 2000: Business process engineering of US State Dept. system for transparency in the "weapons non-proliferation" budget expenditures supporting Science Technology centers in Moscow and Kiev, with funds from US, EU & Japan.
- 2003-2004 Consultancy for EPA on enhanced *Lotus Notes mail* templates, "*SameTime*" and "*QuickPlace*" collaboration.
- 2001: Modeling and spatial expertise to energy infrastructure projects in petroleum products, natural gas pipelines and electricity for state, national and multi-national projects (Massachusetts, DOE/EIA, & IMO of North-East US/Canada).
- 2000-2001: GIS support for DOE response to Congress on environmental Long-Term Stewardship for over 100 former nuclear waste sites as web-navigable PDF black-and-white zoom, plus GIS toolset-accessible standard layers in color.
- 2000-2001 On behalf of several federal agencies, participated within the FGDC (Federal Geographic Data Committee) working group, the OpenGIS Consortium, and Data Sharing consortia on interoperable systems, data, and standards.
- 2001: Peer reviewed "*Extending Digital Dividends Public Goods and Services that Work for All*" for CIO Council / GSA
- 2000-2001 GIS Architect/Business Process for \$1.3 million DOJ Civil Rights Redistricting Application using ArcGIS 8.1
- 1998-1999: Technical direction a large internal group of DynCorp designers, administrators, graphic artists, analysts and subject matter content staff, to consistently service multiple Work Assignment Managers for federal HQ/regional clients.

D) University-Level Teaching

- 2006: At Western Washington University developed detailed GIS history of Bellingham Harbor and current Birch Bay Urban Growth Area, also taught "Introduction to Planning" course for WWU's Huxley College of the Environment.
- 2003-2004: Co-developed proposal to redesign American University's M.S. program to become a professional degree based on case study methods and team "capstone" projects – successfully won multi-year Sloan Foundation funding.
- 2002-2004: At American U. upgraded GIS capability for labs, faculty; project plans for global health promotion statistics.
- 1983-1985: At Auckland University taught junior year course in *Process Analysis & Synthesis*, senior year course in *Process Design and Design Project* plus developed a six-workstation computer-based training lab. The Analysis class featured Pinch optimization. Design Project in teams of four each with their own process, with self-selected team lead.

UNIVERSITY-LEVEL EDUCATION

- Bachelor of Engineering (Hons), **Chemical & Materials Engineering**, University of Auckland, NZ 1970
- Partial requirements towards PhD in "**Expert Systems for Steelmaking**", University of Auckland, 1972

PROFESSIONAL AFFILIATIONS

- Associate in Open GIS Consortium (DynCorp) and former ESRI Corporate Consultant Business Partner
- Former "National Association for Environmental Management" member and workflow solutions presenter
- 1993-1995: Past Refining Chair, Petroleum Environmental Research Forum
- Professional Engineer (1983 Texas #53970 and 1985-1990 IPENZ #100658)
- Past Member of IChemE in the UK, plus AIChE - rejoined in the US after NZ.

SECURITY BACKGROUND

- Became U.S. citizen in Sept. 2004; "*Interim Secret*" clearance
- Dept of Justice "Public Trust" cert. in 2001 for Civil Rights GIS

SELECTED PUBLICATIONS & PRESENTATIONS (linked online at www.BobAndrew.info/publications.htm)

- Facilitator for "[Universal Access Expedition](#)" workshop, monthly at National Science Foundation in Ballston, on behalf of GSA's Next Generation Strategies, Office of Government-Wide Policies
- "[Implementing ArcGIS 8.1 for Redistricting](#)" ESRI International User Conference, July 2001 and repeated at ESRI's [Mid-Atlantic User Group](#) Meeting, Washington DC, November 2001
- "[Mobil Refines its EHS Regulatory Practices with Notes](#)" "Streamline" News for Manufacturing, Summer 1998, Wellesley Information Services
- "[Applications of Lotus Notes to Trade Association Processes](#)" Seminar to [Chemical Manufacturers Association](#) staff, 23 January 1998
- "[Deploying Solutions Globally with Notes, NotesMail & Domino](#)" "Show Me the ROI". R D Andrew & R W Esser at [Lotusphere](#) 1998
- "*Knowledge Management Across the Global Manufacturing Network using Lotus Notes and Domino*" [Benchmarking Partners](#) for Lotus "Collaborative Solutions for [Manufacturing](#)"
- "*Personal, Corporate and National Environmental Responsibilities*" 4th August 1997 at [Georgetown University](#) for [Iacocca Institute](#) students of [Global Village for Future Leaders](#)
- "*Use of Lotus Notes and Domino in [EHS at Mobil](#)*", July 1997 for [National Association of Environmental Managers](#) 2nd Annual Notes Workshop
- [API Publication 335](#), "*Refinery MACT Workshop*" for the [American Petroleum Institute](#) with USEPA [Office of Air Quality Planning and Standards](#). 23-24 October 1995, Orlando, Florida
- "*Emission Inventory Applications of [Refinery Stream Speciation Data](#)*" October 1995 for [AWMA](#) Specialty Conference, Raleigh, NC and in [Hydrocarbon Processing](#) August 1997
- "*Toxic Combustion Byproducts*", [PERF Project 92-19](#) (Bob Andrew & Jim Seebold)
- [API Publication 4630](#), "*Electronic Exchange of Environmental Compliance Information: (see process web-links in table at www.BobAndrew.info/projects.htm) A Proposed Approach*", August 1995. (Bob Andrew-Mobil & John Grisinger-Radian)
- "*Reducing the Desalter Environmental Impact*" [PERF Project # 91-14](#), (Members Only) January 1993, [Petroleum Environmental Research Forum](#)
- "*Prevention of Reformer Overfiring During Startup*" C. J. T. Bush, H. J. Weake and R. D. Andrew, [AIChE Loss Prevention Symposium](#), San Diego, 1990
- "*Interdisciplinary Interaction in Chemical Engineering Design*" R. D. Andrew, [University of Auckland Chem. Eng Dept](#) seminar, 1983

- "Alternatives to the Land Disposal of Hazardous Wastes" R. D. Andrew
Presentation to the Colorado House [State Affairs Committee](#), 1983
- Seminar on "Tank Truck Vapor Recovery/Collection Equipment and its Relation to Tankage"
R. D. Andrew and J. B. Roach, [ILTA](#) National Meeting, 1981
- "A Review of Alternate Wastewater Processing Schemes for Independent Bulk Liquid Terminals"
R. D. Andrew and J. B. Roach, [ILTA](#) National Meeting, 1981
- "The Role of Humanities in Engineering - A Personal View" R. D. Andrew
Proceedings of the [Auckland University Engineering Society](#), 1971
- "Kinetic Model of Steel Refining for a Batch Process" R. D. Andrew and G. A. Wright,
Proceedings of the [Auckland University Engineering Society](#), 1970

USING LICENSED ANALYSIS, MODELLING, TOOLS, PROCESSES & EQUIPMENT

A) EXPERIENCE WITH LICENSED ANALYSIS AND MODELING TOOLS

- Used [HYSYS](#) to extract transport properties for hydro-treater unit hydraulics for Marathon; to review options for sour water treatment, fuel gas system, and hydrogen supply system options for BP.
- Used SimSci's [PRO/II](#) at Shaw for flare system condensation, Hydrocracker stream transport properties; and at Mobil R&D Corp for modeling flowsheets of entire refinery processes, many of which Mobil had developed individual unit process modules, based upon licenser technologies.
- Used OSI Software's "[PI](#)" and [Baytek](#)'s "BLISS" at BP Cherry Point, Mobil Global Prof. Services, Mobil R&D Corp and NZ Synfuel for real-time access to process tag data & lab sample data.
- Used [UMIST-based "pinch"](#) analysis when I was Senior Lecturer 1983 - 85 at University of Auckland responsible for the classes in Process Analysis & Synthesis, Process & Plant Design and senior-year Design Project. This optimization methodology for integration was the intellectual foundation for [Linnhoff-March](#), now part of KBC.
- Used [ACSL](#) (Advanced Continuous Simulation Language) as Technology Supervisor at N.Z. SynFuel to model upsets in steam and fuel gas systems, to assign optimally robust control system settings to bring under control.
- We used the original DOE "ASPEN" software at N.Z. SynFuel to model methanol synthesis I used this model to optimize CO₂ content of feedstock and reformer firing, under constraints of temperature (metallurgy) and fuel.
- While a Team Leader at [ICF Consulting](#) used their methodologies for CO₂ reduction technologies, electricity transmission modeling, and national-scale power markets.

B) EXPERIENCE WITH LICENSED PROCESSES AND EQUIPMENT

- At Petromas Engineering Services I was responsible for start-up and commissioning several UOP-licensed [Merco](#) fixed-bed units for sweetening light-end process streams.
- Also at Petromas I was responsible for startup & trouble-shooting operation of fired heaters from [Foster-Wheeler](#) including starting up an entire refinery from cold on LPG then gradual switch over to refinery fuel gas operation.
- At NZ SynFuel I worked directly with commissioning engineers from Davy PowerTech on their [methanol plant design](#) for twin 1,000 MT/day units using ICI synthesis process, In my reformer optimization work I went to [John Zink](#) in Tulsa to oversee testing of new burners with a longer flame to safely achieve a 9% increase in feedstock throughput, and with [Haldor-Topsoe](#) on optimum operation of [catalysts](#) for heavily top-fired reforming.
- At Mobil R&D Corporation I was chosen to arbitrate between two, competing, internal developments for estimating missing properties from a crude assay with incomplete data. Although they both started from the same intellectual base, I chose "MAPS" as more capable of dealing with updates to data, better documented code & user support.
- At Mobil R&D Corp I was privy to work our Process Engineering group was doing with [Kellogg](#) on advances in [FCC internals](#), such as Atomax nozzles.