

KRISTIN D. HOCKETT

PROFESSIONAL HISTORY:

Risk Management Professionals, Inc.;
Mission Viejo, California; Senior
Engineer; 2002-Present

EDUCATION:

*Mechanical Engineering, Bachelor of
Science, University of Southern
California, Los Angeles*

CERTIFICATION:

- *California Registered Engineer-in-
Training registered with the Board for
Professional Engineers and Land
Surveyors (EIT 128256)*
- *Sandia Risk Assessment Methodology
for Water Utilities (RAM-WSM) Certified*
- *Incident Command System IS-100*
- *Incident Command System IS-200*
- *National Incident Management System
(NIMS) IS-700*
- *National Response Plan (NRP) IS-800*
- *AWWA Emergency Response Tabletop
Facilitation Workshop Trained*
- *California Office of Emergency Services
Benefit-Cost Analysis Trained*

PROFESSIONAL AFFILIATIONS:

- *Southern California Society for Risk
Analysis (SCSRA) – President*
- *Refrigerating Engineers and Technicians
Association (RETA)*

PRESENTATIONS & PUBLICATIONS:

*Challenges in Integration of Emergency
Planning Requirements – With Solutions!
(One Plan, One Place). Southern
California Society for Risk Analysis
Emergency Planning and Response
Workshop: Diamond Bar, CA. October,
2004.*

*Potable Water System Hazard Mitigation.
(Primary Author) Disaster Resistant
California Conference: Sacramento, CA.
May, 2005.*

Ms. Kristin D. Hockett is a Senior Engineer with Risk Management Professionals, and as such provides detailed project management and oversight, as well as technical guidance to



various Project Teams within the organization. Her project experience is extensive throughout all product lines offered by Risk Management Professionals, including the following:

- HAZOP Studies
- Layer or Protection Analyses (SIL Assessments)
- California Accidental Release Prevention (CalARP) Programs
- Risk Management Plans
- Process Safety Management Programs
- Process and Instrumentation Diagram Development and Field Verification
- Security Vulnerability Assessments
- Emergency Response Plans
- Hazard Mitigation Plans
- Quantitative Risk Assessments
- Hazardous Material Inventories
- Regulatory Compliance Audits and Support
- Benefit-Cost Analyses / Statistical Analysis for Failure Probabilities

Ms. Hockett has experience managing significant projects and understands the necessary planning to coordinate large, involved projects and has extensive experience establishing and maintaining schedules, closely monitoring project progress and budgets, and implementing the formal quality control and security program.

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While Ms. Hockett has experience in diverse product lines, all completed projects have used high-end qualitative and/or quantitative risk analysis techniques for decision-making and are focused within the following disciplines:

- petroleum (production, refining)
- chemical manufacturing
- water treatment and distribution systems
- wastewater treatment and collection systems
- refrigeration systems
- cogeneration NOx reduction systems
- municipal planning (HazMat releases, natural hazards)

PROJECT EXPERIENCE:

Recent Projects

Abu Dhabi Gas Industries Limited (GASCO) - Ms. Hockett has managed and facilitated HAZOP & LOPA Studies for the Abu Dhabi Gas Industries Limited (GASCO) development of the sour gas reservoir in the Shah Field and transportation of the sales gas product and sulphur via pipeline from the Shah plant to Habshan and Ruwais respectively. The reservoir is very sour with H₂S levels as high as 23 mol%. Ms. Hockett coordinated an accelerated project schedule for 13 HAZOP Studies for the entire gas plant (including 4 simultaneous studies) and provided resources, as well as budget tracking and invoice reviews. In addition, Ms. Hockett provided overall project management by developing and coordinating deliverables, providing quality assurance and control, and executive review.

Belridge Gas Plant – Ms. Hockett conducted a comprehensive Compliance Audit of the Process Safety Management program for Seneca Resources' Belridge Gas Plant. In addition, Ms. Hockett facilitated a plant-wide HAZOP Study and external events analysis and currently developing the OSHA Process Safety Management Plan and EPA Risk Management Plan.

Williams Midstream - Developed the 5-year update and Compliance Audit of the Williams Natural Gas Liquids Conway Fractionator, MCFS Conway Underground East, MCFS Conway Underground West, and MCFS Mitchell facilities in Kansas. This included detailed facility audits and site-walkdowns, as well as RMP/PSM documentation review, Offsite-Consequence Analysis updates, and re-submittal of the RMP Submit to the Environmental Protection Agency. In addition, PSM elements that are found to be deficient are documented in the final report and will be updated as an additional phase of the project.

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REC Silicon – Ms. Hockett facilitated HAZOP Studies for the Silane Distillation and Hydrogenation Units for the REC Silicon Plant in Moses Lake, Washington. These HAZOP Studies also include the simultaneous Layer of Protection Analysis (LOPA) SIL values prior to plant start-up, as well as a human factors evaluation.

American States Utility Services – Ms. Hockett is currently developing Risk Assessments for the American States Utility Services water and wastewater systems for Ft. Jackson (South Carolina) and Ft. Bragg (North Carolina). These Risk Assessments include thorough site evaluations of all facilities and inspection for compliance with health and safety requirements, security regulations, and RMP/PSM compliant programs.

Hazard and Operability Studies/Layer of Protection Analyses – Ms. Hockett has facilitated and participated in HAZOP study sessions and documentation for various chemical processes. The HAZOP study methodology includes a detailed review of the hazards associated with the system design, as well as the adequacy of existing safeguards (i.e., alarms, training, etc.). Specific HAZOP study facilitation/participation ranges from water treatment systems, to refrigeration systems, to offshore petroleum production processing, to hydrogenation and fluidized bed reactors for the production of polycrystalline silicon for solar applications. Specific HAZOP Study units include, but are not limited to, the following:

- Slug Catcher
- Inlet Separation and Condensate Stabilization
- Acid Gas Removal (Gas Sweetening & Amine Regeneration)
- Liquid Sulphur Transport System
- Gas Plant Central Refrigeration (Propane)
- Fluidized Bed Reactors
- Hydrogenation
- Scrubber Systems
- Finished Product Pipeline Transport System (Pig Launchers and associated piping for Sales Gas, Condensate, Liquid Sulphur, and NGL)
- Water Treatment Systems
- Wastewater Treatment Systems
- Ammonia Refrigeration Systems
- Ammonia Etching and Circuit Board manufacturing process

Additionally, as part of complex HAZOP Studies Safety Integrity Level (SIL) rankings were completed to assess the adequacy of the safeguards in place to mitigate against hazardous events relating to major process hazards, identifying those safeguards that do not meet the required risk reduction for a particular hazard, and making reasonable recommendations where a hazard generates a residual risk that needs further risk reduction. One mechanism for evaluating SIL rankings is to conduct a Layer of Protection Analysis (LOPA), which is an analysis tool that builds upon the information developed during the HAZOP Study. Hazard scenarios identified in the HAZOP Study as having a high-consequence severity level are evaluated to determine the Safety, Environmental and Commercial Safety Instrumented System (SIS) Integrity Levels. This accomplished by evaluating the initiating event (based upon the HAZOP cause), determining the consequence (as identified in

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the HAZOP), and identifying independent protection layers that mitigate the initial cause (includes select safeguards identified in the HAZOP). The probability of failure on demand is factored into the analysis to determine quantitatively whether or not the risk associated with the specific scenario is tolerable. If the risk is not tolerable, basic process control systems, inherently safer design, or SIS features (with associated SIL level) are recommended by the LOPA Team. Ms. Hockett was instrumental in the design of Risk Management Professionals LOPA software tool that is used in the combined HAZOP/LOPA Studies. Since each client develops specific criteria for determining acceptable risk, Ms. Hockett is responsible for reviewing specific project requirements for LOPA and customizing the software and approach to meet the client's procedure.

In addition to specific HAZOP studies, Ms. Hockett is knowledgeable in the applicability of numerous elements of environmental regulations (including RMP, PSM, and CFATS) for flammable substances within a process, including identifying inventory thresholds, mixture compositions, collocation and connectivity issues, lower flammability limits (flash fires) – NFPA ratings, flammability distance endpoints, etc. As part of her experience, Ms. Hockett has evaluated hazards and regulatory compliance issues for the following processes associated with the petroleum refining industry:

- Delayed Coker Units
- Fluidized Catalytic Cracking Units
- Hydrocracker Units
- Alkylation Units
- Hydrotreating Units
- Bensat Units
- Isomerization (Butane)
- Crude Units
- Tank Farms (LPG, Diesel, Gasoline, Naphtha, Avjet)
- Cogeneration

CalARP/RMP/PSM Program Development and Revalidation – Ms. Hockett has assisted in the development of California Accidental Release Prevention (CalARP) Programs, Risk Management Plans (RMP), and Process Safety Management Programs (PSM) for a diverse spectrum of facilities. As part of these efforts, she has conducted P&ID reviews and updates, Offsite Consequence Analysis (OCA), external events analysis, dispersion modeling applications, recommendations review, program development, USEPA and Administering Agency submittals, and review. The following is a list of projects in which Ms. Hockett participated:

- Airgas Dry Ice
- Stearns Gas Plant
- Orange County Water District
- City of Redlands Municipal Utilities Department
- Hinsdale Farms
- Don Miguel Foods, Anaheim
- Schott Gas, Orange County
- Goodrich Aerospace
- Trinchero Family Estates, Sonoma County
- Cleugh's Rhubarb, Buena Park
- Williams Midstream
- Seneca Resources, Belridge Gas Plant
- Pepsi Bottling Group
- Ralphs Co.
- Starkist-Inc.
- Pacific American Fish Co. (PAFCO)
- Fisher Scientific International Inc.
- Ventura Water Reclamation Facility
- Los Angeles Department of Public Works
- Confidential Military Parts and Equipment Manufacturer, Orange County
- Seven-Up Bottling Company

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Piping and Instrumentation Diagrams (P&IDs) – Ms. Hockett has constructed P&IDs for a diverse spectrum of facilities (including field verification):

- Dos Cuadras Onshore Facility
- Hinsdale Farms: Refrigeration System
- Seven-Up Bottling Group: Refrigeration System
- Harbor Cogeneration: NOx Reduction System
- Ontario Ice and Cold Storage: Refrigeration System
- Airgas: Refrigeration System
- Three Valleys Municipal Water District: Water Treatment System

Compliance Audits – Ms. Hockett has completed CalARP/RMP/PSM Compliance Audits, which includes facility walkdowns and familiarization with the regulated covered process, reviewing Prevention Program documentation in order to identify deficiencies that would result in citations from the applicable regulatory agencies, developing a line item report that lists the specific deficiencies, and meeting with facility personnel in order to identify any other needs or services they may require.

Hazardous Materials Area Plan – Ms. Hockett has participated and managed the development of several Hazardous Materials Area Plans prepared for the Administering Agencies pursuant to the requirements of the California Health and Safety Code. An Administering Agency for hazardous materials emergency planning and response programs is required to establish an area plan for emergency response to a release or threatened release of a hazardous material within its jurisdiction. The primary purpose of a Hazardous Materials Area Plan is to assist agencies and businesses in their hazardous materials pre-emergency planning activities and emergency response roles by functioning as a response planning and guidance resource. The Area Plan describes the emergency organization, assigns tasks, specifies policy and general procedures, and provides coordination of planning for all phases of emergency planning for a hazardous materials incident or emergency. Additionally, the Area Plan assists the public in obtaining information about facilities that pose a threat or potential hazard to the community health and safety (“Community Right-to-Know”). Ms. Hockett contributed to the development of the following Hazardous Materials Area Plans:

- Inyo County
- Torrance Fire Department
- City of Compton Fire Department
- City of Garden Grove
- Burbank Fire Department

Response Capabilities Assessment – Ms. Hockett has completed Response Capabilities and Needs Assessments to evaluate a City’s ability to respond to medium and large-scale chemical releases. These assessments included an evaluation of each departments responsibilities and resources for emergency response. Additionally, the City’s conformance with California Certified Unified Program Agency (CUPA) standards and the National Incident Management System were evaluated. Additionally, with emerging terrorism and Weapons of Mass Destruction threats, the City’s capacity to respond to chemical releases resulting from criminal or terrorist acts was included in the study. To document the Response Capabilities and Needs

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Assessment, the analysis is completed through the evaluation of current capabilities, performing a tabletop exercise, and analyzing the need for additional capabilities. Ms. Hockett has completed a Capabilities Assessment for the City of Berkeley, Toxics Management Department.

Security Vulnerability Assessments – Ms. Hockett played an integral role in the application of the Sandia RAM-WSM methodology, including prioritizing criteria, prioritizing facilities, characterizing high priority facilities, developing threat scenarios based upon threat assessment methodologies, and using a Scenario-Based Assessment approach to develop recommendations in the form of prioritized lists of security countermeasures. These recommendations were used as the basis for an integrated Security Enhancement/Prioritization Plan (SEPP) – Capital Improvements plan that was submitted as part of each project. The results of these efforts were used for preparing and/or updating the Emergency Response Plans for each of the water systems. All of these tasks were combined into comprehensive and confidential Security Vulnerability Assessment reports prepared for each system. The following is a list of projects in which Ms. Hockett participated:

- **Tier I Security Vulnerability Assessments:** Confidential Water Department in Orange County, Mesa Consolidated Water District, City of Orange, Confidential Water District in Los Angeles County, Placer County Water Agency, Three Valleys Municipal Water District
- **Tier II Security Vulnerability Assessments:** Carlsbad Municipal Water District, City of Chino, City of La Habra Municipal Water Systems, City of Redlands Water Department, City of Roseville Water System, City of Tustin Water Department, Port Hueneme Water Agency, Valley County Water District, Victor Valley Water District
- **Tier III Security Vulnerability Assessments:** City of Port Hueneme, City of San Juan Capistrano, Channel Islands Beach Community Services District, City of Camarillo, City of Paso Robles, City of Manhattan Beach, City of La Palma, Western Heights Water Company, Coachella Valley Water District, Mid-Peninsula Water District, City of Banning, City of El Centro, City of Lincoln City, Nevada Irrigation District, City of Madera, City of Seal Beach, South Coast Water District

Hazard Mitigation Plans –Ms. Hockett has experience developing FEMA-approved Hazard Mitigation Plans, which includes the development of a baseline understanding of the natural hazard risks, determining ways to reduce those risks, and prioritizing recommendations for implementation. An open, public process is used to verify candidate hazards, determine the full impacts throughout the planning area, interface with partner agencies to determine existing mitigation measures, develop possible approaches to projects which will reduce the impacts, and prioritize them for implementation. The analysis of current vulnerabilities and potential threats results in a prioritized list of recommended improvements and the estimated costs of implementing the improvements.

Ms. Hockett develops HMPs in accordance with FEMA requirements using the tools provided by FEMA and techniques developed from our background in Qualitative Risk Assessment (QRA), Seismic Safety, and Risk-

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Based Decision Making (RBDM). Hazard profiles, including vulnerability to earthquakes, floods, fires, power outage, and dam failure, were developed to serve as the basis for the damage assessment and corresponding loss estimates. Estimating losses is essential to decision-making, providing a basis for developing mitigation plans and policies, emergency preparedness, and response and recovery planning.

Ms. Hockett has developed Hazard Mitigation Plans for the following agencies and municipalities:

- Victor Valley Water District
- City of La Habra
- City of Tustin
- Village of Port Chester, NY
- Eastern Municipal Water District
- Valley County Water District

Pre Disaster Mitigation (PDM) Grant Program Applications – The Pre-Disaster Mitigation (PDM) Grant Program provides funds to States, territories, municipalities, and special districts for pre-disaster mitigation planning and the implementation of cost-effective mitigation measures prior to a disaster event. Funding these plans and projects reduces overall risks to people and property, at the same time reducing reliance on funding from actual disaster declarations. The completion of PDM Grant Applications requires the compilation of pertinent background information, mitigation plan information, project description (including scope of work, cost estimates, and identified alternatives), hazard information and analysis (including damage history), environmental impacts, and a detailed benefit-cost analysis.

The Benefit-Cost Analysis (BCA) for implementing the mitigation projects is required to justify cost-effectiveness of the proposed project. The Cost-Effectiveness information section of the PDM Grant Application requires a thorough BCA (with supporting documentation), the identification of the source of the problem, frequency of the hazard, severity of the hazard, properties at risk, and mitigation project alternatives.

Furthermore, Ms. Hockett has developed a model for completing benefit-cost analyses specifically for water and wastewater agencies. This model incorporates specific fragility curves for various types of tanks, repair rates for pipelines constructed of different materials, and the benefits associated with providing water service, sanitation service, and fire protection. This model was extremely well received by the California Office of Emergency Services and will be forwarded to the Federal Emergency Management Agency for approval as an acceptable methodology for completing detailed Pre-Disaster Mitigation Grant applications.

The following is a list of clients that Ms. Hockett assisted in the PDM Grant Application process:

- Irvine Ranch Water District
- Western Municipal Water District
- Cucamonga Valley Water District
- City of Oxnard
- Eastern Municipal Water District
- Victor Valley Water District
- Ojai Valley Sanitary District
- South Coast Water District

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Emergency Response Plan Development –Ms. Hockett develops and implements comprehensive Emergency Response Plan, which includes addressing specific security, operational, and natural hazard emergency scenarios, while coordinating a response that is consistent with SEMS and NIMS specifications to allow for a smooth interface with the operations of the municipal emergency response agency to ensure effective response to an emergency and provide the ability to operate under Unified Command. Ms. Hockett has extensive experience with the organization, development, and production of emergency response plans and developed plans for the following clients:

- Placer County Water Agency
- City of Roseville Water System
- Victor Valley Water District
- City of Redlands Water Department
- City of La Habra, Water Dept.
- Orange County Water District
- Nevada Irrigation District
- City of La Palma Water Department
- City of Riverside, Water Maintenance Division
- Ramona Municipal Water District
- Encina Wastewater Authority
- Western Municipal Water District

In addition, Ms. Hockett managed the development of a city-wide Emergency Response Plan for the City of La Habra and the City of Garden. The Emergency Response Plans were developed to address the responsibilities of the City during a natural disaster or similar emergency.

Training – Ms. Hockett developed a training program to implement emergency response plans. The training program included emergency response plan orientation, development of a comprehensive tabletop exercise, and exercise debrief with recommendations for improvements. Upon completion of the initial phase of the training program, key recommendations for Emergency Response Plan improvements were incorporated into the Emergency Response Plan. Ms. Hockett has developed tabletop exercises involving earthquake, flood, and hazardous materials scenarios and has provided training on the Standardized Emergency Management System (SEMS), National Incident Management System (NIMS), and Incident Command System (ICS) to over 200 students.

Urban Water Management Plans – Pursuant to the Urban Water Management Planning Act (Water Code Sections 10610 – 10656), water agencies that provide water to over 3,000 customers (or 3,000 acre-feet of water annually) are required to develop an Urban Water Management Plan (UWMP). An UWMP includes water supply and demand projections over the next twenty years, as well as an assessment of the water supply reliability during normal, dry, and multiple-dry years. In addition, the UWMP emphasizes water conservation, monitors the implementation of Demand Management Measures, describes planned water supply programs, investigates opportunities for utilizing recycled or desalinated water, addresses catastrophic supply interruption (earthquake, regional power outage, terrorism), and includes public participation and agency coordination. Ms. Hockett has applied her extensive water system infrastructure knowledge to the development of several Urban Water Management Plans.