Michelle Naef, P. Eng

Education

Doctor of Philosophy, Chemical Engineering

University of Alberta – in progress

- Research – Engineering professional identity, risk perception and decision-making, plantwide safe operating envelope (Tennessee Eastman control problem), knowledge transfer (process hazards)
- Teaching Assistantships – ENGG 404, CH E 464
- U of A Marching Band (current)

Bachelor of Science, Mechanical Engineering Co-op

University of Alberta 2006

- Academic All-Canadian (Pandas Rugby, 2005)
- U of A Mixed Chorus (2005)
- U of A Concert Band (2004)

Experience and Professional Achievements

Sherritt International Corporation – Fort Saskatchewan Nickel-Cobalt Refinery

August 2017 to November 2018

Position - Project Manager

- Managed capital projects through all stage gates from concept to close out
    - Corporate structure presented unique challenges for stakeholder management
    - Projects with risk-based justifications had historically been difficult to progress; disciplined application of industry standards and presentation of objectively defined risks led to successful progression of multiple stalled projects
- Assigned to the development of a Site-Wide Process Hazard Assessment
    - 20+ hours of interviews with Operations, Maintenance and Engineering personnel
    - Developed project execution plan for the Process Hazard Assessment which would position the results as a foundation for future Process Safety Management framework
    - Evaluated and incorporated the results of previous site risk-management activities
    - Sought integration with immature elements of existing Pressure Equipment and Management of Change programs
- Portfolio contained up to 28 active projects, ranging in size from $100K to $8M
    - Flat organizational structure - significant accountability for the Project Manager, from field supervision to contract drafting, technical assurance (deliverables) and largely self-managed project controls
    - Projects from all disciplines, Electrical, Process Control, Civil/Structural, Process optimization and Mechanical Equipment
    - Delivered the rebuild of a collapsed stainless steel tank in under 5 months

- Managed the schedule-driven “Cobalt 700” initiatives
    - In three months, produced feasibility studies for 3 major throughput-increasing initiatives
    - Magnetic Separation, selective leaching (Cobalt) with complex fluid/mixing dynamics and twinning of a Crude Salt Crystallizer (fouling behaviour presenting unique challenges for piping and pump selection)
    - Complex process chemistry and overlap between projects managed with disciplined documentation of scope and technical decisions
- Participant in the 5-day Value Stream Assessment for Asset Management
- Lean and Causal/5-why techniques applied to generate an “A3” project around Integrated Planning and Scheduling
    - Presented findings to Executive and Senior Management
    - Developed a workflow improvement for work orders requiring Engineering

Shell Canada - Scotford Upgrader/Refinery/Chemicals

June 2013 to August 2017

Positions - Process Safety Engineer, Project Development Engineer

- Developed Capital projects through Problem Definition and Initial Approval phases
    - Specialized in projects with Safety or End of Life justifications
- Analysis and reporting for Process Safety incidents in the Styrene and Monoethylene Glycol plants including loss of process containment
    - Assignment of consequence scores based on API and legislative criteria
    - Recommendations on remedy/restoration and return to compliance
    - Critical assessment of ALARP (as low as reasonably practicable)
- Drafted the Governance and supplied Management of Change subject matter expertise for a site-wide organizational re-structuring
    - Re-structuring combined two distinct international business divisions
    - Evaluation of conflicts and synergies between policy documents from both organizations
- Mechanical Engineering support during Refinery Turnaround
    - Analyzing a variety of inspection findings, developing repair procedures
    - Opportune inspection and observations on out-of-service equipment
    - Signed off on Pre-Startup Safety Reviews and Vessel Closure Inspections
- Developed a Procedure for Line Designation Table creation and updates for the Refinery
    - led an external contractor in migrating existing data to a single format
    - Assessed all major process lines for ABSA AB-525 compliance
    - Identified existing Over-pressure safeguards and gaps
- Collaborated with Maintenance personnel to deliver a procedure that contributed to improved site performance in MOC-related KPIs

WorleyParsons – Edmonton

April 2012 to May 2013

Position - Intermediate Mechanical Engineer

- Led team of 5 Mechanical Engineers; mentoring, technical leadership and management of work assignments under the larger Project Schedule
    - Process Piping Line Designation Tables, validation of hydraulics and design envelopes

    - Review of pipe stress analysis and support design
    - Material Requisitions/Specifications for major equipment; exchangers, pumps, control valves and specialty piping
    - Generation and validation of Quality Plans and Inspection Test Plans for static equipment
    - Technical Bid Tab Reviews
- Performed site-wide survey of mix points identifying high risk locations for thermal fatigue and erosion/corrosion failures in an LC Finer
    - Evaluated possible mix points for multiple damage mechanisms; phase effects, thermal fatigue, impingement, high velocity
    - Presented findings using a project risk matrix with recommended acceptance thresholds based on prior incidents at the client's facility
- Modelled Shell and Tube Heat Exchangers and Exchanger trains using HYSYS simulation data to evaluate system for vibration effects in all operating modes
- Contributed to design HAZOPs and performed technical assurance and authentication for project deliverables (2012, 2013)
- Facilitated a Kepner-Tregoe structured alternative assessment with client technical specialists
- Detailed problem definition and presentation of constraints
    - Key decision involved material selection for a Urea stripper, complex and unusual metallurgy with limited available test data
    - Installation of stripper allowed 50% increase in throughput and higher operating temperature

Syncrude Canada Ltd. – Fort McMurray Upgrader

March 2008 to April 2012

Positions - Maintenance Field Lead, Mechanical Planner, Maintenance Advisor, Mechanical EIT

- Front-line field supervisor for 60 contract tradespeople (Rope Access, multiple trades) primarily assigned to risk mitigation around failed steam tracing
    - Managed contract workforce for three simultaneous unplanned outages
- Led Refinery Coordinators through implementation of a Reliability Systems/Asset Management framework
    - Improvements in 23 Key Performance Indicators over 9 months
    - Immediately followed by aggressive roll-out of SAP
- Led investigation on a fire in a Light Gas Oil Hydrotreating Unit
    - Accountable for reviewing initial scene reports and follow-up investigation
    - Technical analysis including development of Fault Tree and determination of root cause
    - Presentation of results and recommendation for Maintenance PM to prevent future occurrence
    - Evaluation/testing of Preventative Maintenance action over 5-6 months
- Developed work scopes, inspection strategies, Turnaround reports and inputs for Risk Based Inspection framework (2008-2009)
    - Evaluated effectiveness of Acoustic Emissions Testing on Heavy Gas Oil Hydrotreaters
    - Assessed repeatability and effectiveness of eddy current inspection in exchanger tubes
    - Determination of root cause and development of work scopes to address equipment failures
    - Successfully replaced bad-acting control valve with a series of orifice plates

    - Prepared and reviewed designs for multiple leak enclosures in hazardous service
    - Performed fitness for service assessments on static equipment and presented conclusions to senior management
    - Reviewed lab results for complex failure mechanisms (metallography)
- Participant in site wide mix-point review following thermal fatigue failures at similar sites
    - Development and application of risk-based evaluation (most likely consequence)
    - Recommendations for further testing (thermography) and evaluation of results as required

OPTI/Nexen Long Lake – SAGD and Upgrader

March 2007 to March 2008

Position - Capital Projects EIT

- Developed the capital projects delivery process framework and all supporting forms and document guides (2008)
- Led initiative to train all OPTI employees in the safe commissioning, operation and maintenance of Oxygen piping systems involving industry experts
    - Oxygen piping system had not been properly preserved and required decontamination
    - Operators had not received basic training in Oxygen handling or risks associated with pure oxygen service
- Managed and delivered the Capital Projects Portfolio
- Successful campaign to senior executive resulting in delivery of a shelved contingency project that would eliminate proposed sulphur stockpiling
- Delivered HVAC upgrades to the onsite laboratory facility, fire suppression system to the control room and upgrade to the site water treatment plant

Shell Canada – Scotford Upgrader

September 2006 to March 2007

Position: Pressure Equipment EIT

- Developed an engineered tool workflow, form and document storage strategy to address use of un-controlled, potentially hazardous tools
- Completed a range of technical work packages requiring familiarity with ABSA legislation and codes, ASME codes, API practices and relevant sections of the OH&S Act
- Performed tube life assessment on new Columbium/Niobium stabilized alloy by projecting creep data from similar alloys, hand calculations compared to Code Calculation (CodeCalc) software
- Using TEMA calculations for flow induced vibration on in-service exchangers, successfully validated HTRi models against Maintenance and Inspection findings for flow induced vibration

Courses and Training

Workplace Incident Investigation (2018)
Heat Transfer and HTRi (Shell, 2015)
Fitness for Service Assessment (2015)
Technical Safety Engineering 101 – Process Safety Fundamentals (Shell, 2014)
Sauder School of Business "The Art of Facilitation" (2011)
Syncrude Leadership Excellence Program (2009)

American Management Association "Building Effective Teams" (2007)
Alberta Pressure Equipment Safety Legislation (PESL) training (2007)
ASME B31.1 and B31.3 technical training (2007)
NAIT 1st Year Welding (2006)

Professional Memberships

Professional Engineer, Association of Engineers and Geoscientists of Alberta (APEGA)
Student member, American Institute for Chemical Engineering (AIChE)

Extra-Curricular

Treasurer for the Klondike Carriage Club (2018-present)
Member, Strathcona County Multi-Use Agricultural Facility Advisory Board (2018-present)