Agenda for 2011 Conference

Tuesday, May 24, 2011

#	Day	When	Author(s)	Affiliation	Title
		6:00 – 7:30			**Ice Breaker & Registration Opens**

Agenda for 2011 Conference

Wednesday, May 25, 2011
Distribution Systems & Equipment Modeling

		8:30			Conference Start
1101 FINAL RECD	Wednesday	8:30 – 9:15	Melissa Debevc,	Union Gas Limited	Demand Profiles – Practical Considerations when Creating and Interpreting Demand Profiles This paper will illustrate demand profile shapes for differing customer types and explain the factors that affect the shape of these profiles. It will explore profile shapes for laterals off the main system which have different shapes based on the mix of customer types. The paper will then discuss how the shape of a lateral's profile will change based on the temperatures used to create the profile and how this will impact system capacity. Lastly, the paper will discuss how Union Gas has simplified its procedure to create profiles.
1102	Wednesday	9:15– 10:00	Rick Brown, Jim Maguda	PG & E	Peak Day Demand Uncertainty and the Need for Sensitivity Analysis This paper will briefly discuss various sources of modeling uncertainty on local distribution and transmission systems and then focus on extreme cold customer demand uncertainty, the causes of this uncertainty, and options available to address uncertainty when operating and designing these systems. The paper will then recommend sensitivity analyses as a way to address demand uncertainty. Hydraulic results from sensitivity analyses on various distribution and transmission systems will be explored, significant differences in system response discussed, and resulting operating and design decisions will be reviewed. Finally, future plans to improve demand modeling and planning policies will be summarized.
		10:00 – 10:15			Break
1103	Wednesday	10:15 – 11:00	Daniel Heuberger Patrick Wittenberg	RWTH Aachen University	Optimization of Natural Gas Distribution Networks Considering the Reliability of Supply This paper presents the combination of two computer-based methods in order to estimate cost-efficient natural gas distribution networks under consideration of the reliability of supply. The presentation will analyze the requirements for a computer based procedure and present the developed method. Finally exemplary results are shown in order to prove the methods' suitability.
1104	Wednesday	11:00 – 11:45	Virginie Adin,	GDF Suez	Improving safety: A New Blowdown Simulation Module

FINAL RECD			Laure Sinègre, Bernard Rigaux, Roger Pettavino		Dedicated to Distribution Crews This paper focuses on the phenomenon that occurs when gas is directly vented to atmosphere and its modeling in simulation software. Depending on the size of the pipes and the characteristics of the equipment used to vent, the blowdown time can widely change, as does the gas flow. The goal is to develop a simulation module modeling blowdown to help network operators ensure short emergency time response and safety. The main question is how to model high speed flow while providing good reliability and short computation time. Thanks to laboratory and field-case results, a simple, accurate and efficient model has been developed. It highlights the main characteristic of the blowdown
		11:45 – 1:30			**Lunch**
1105 FINAL RECD	Wednesday	1:30 – 2:15	Brad Bean		Maps To Models - Building Distribution System Models From GIS or CAD Data Geographic Information Systems (GIS) and Computer Aided Drawing (CAD) applications are used by many Natural Gas Utilities to maintain information about the facilities in their gas distribution systems. This data is often the same or similar to the information required to build and maintain an hydraulic model of their gas system. This paper will discuss and identify several key issues that should be considered to allow efficient exchange of data between GIS/CAD and modeling applications.
1106	Wednesday	2:15 – 3:00	Joe Kuhner	GTI	Distribution System Planning Considerations Short & Long Term Planning involves more than modeling piping systems and sizing pipe. This presentation discusses the many other items that should be considered when doing system planning. Not all of the items discussed apply to every planning problem. However, these considerations will apply at some time to many various planning problems (new business load, system expansion, main replacement, governmental agency relocation projects). In conclusion, the paper stresses making sure that short term problem solutions fit a long term vision.
		3:00 – 3:15			**Break**
1107 FINAL RECD	Wednesday	3:15 – 4:00	Fábio Capelassi Gavazzi de Marco Gustavo Passos Elias	TBG	Fuel Consumption Model On Natural Gas Compressor Stations Driven by Two-Shaft Gas Turbines This paper proposes an alternative to estimate the fuel consumed by compressors driven by two-shaft gas turbines of natural gas compression stations using turbine speed and air

					inlet temperature. The intent is to reduce the measurement uncertainty in situations where fuel metering is not available. The model will be presented and the results compared with measured data.

Agenda for 2011 Conference

Wednesday, May 25, 2011
Liquid Systems & Leak Detection

		8:30			Conference Start
1108 FINAL RECD	Wednesday	8:30 – 9:15	Arild Stokkenes John Ivar Lokna Lars Hagesæther	Statoil	Case Study of Value Chain Optimization This paper discusses the optimization of a NGL pipeline, and the importance of doing a complete system design evaluation. The presentation will show the importance of tuning a model to real measurements and also discuss the different system design evaluations that lead to an improved understanding and also cost savings.
1109 FINAL RECD	Wednesday	9:15– 10:00	Dale Ball Paul Dickerson John Hertel	Wolverine Pipeline Company Energy Solutions International	Configurable Tools for the Pipeline Scheduler The focus of this paper is to compare and contrast, under different scenarios, a spreadsheet, a transient simulator and a scheduling package, for the accuracy of results, ease of use, speed and performance for use as a pipeline scheduler. An overview of the different methodologies is provided.
		10:00 – 10:15			Break
1110 FINAL RECD	Wednesday	10:15 – 11:00	Phil Carpenter, Nikos Salmatanis, Ken Chrisman	Great Sky River Enterprises Chevron Pipeline	Comprehensive Leak and Spill Quantification Toolset This paper will present a tool set that can be used to quantify potential spill volumes and timing through drain down at a predefined step distance along a cross country pipeline. The primary outputs are spill volume and timing profiles, as well as transient hydraulic profiles and trends. The tool set takes into account the pipeline and leak detection configurations and spill response alternatives, and allows a what-if analysis to be performed on the various options.
1111 FINAL RECD	Wednesday	11:00 – 11:45	Augusto Garcia-Hernandez	Southwest Research Institute	Modeling and Simulation Case Study of a Batching Operation of Crude Oils in a Pipeline System This paper presents a case study of a crude oil pipeline system that works in a batching mode. The main focus of the study was to analyze the effect of pumping two dismissible crude oils in a specific batching schedule to minimize the mixing volume and avoid further contamination of the highest quality oil. Hydraulic simulations of the pipeline system were conducted for steady-state conditions as an initial base for the transient scenarios and batching cycles. The batching cycle was reasonable and within the normal operating conditions expected for the system. The presentation will cover a brief description of the system and its operation, pipeline modeling

					and results. Results have indicated that the mixing interface is slightly larger when the lighter oil batch is followed by the heavy oil. In addition, results indicated a similar mixing trending of the two fluids when the batching cycle is modified.
		11:45 – 1:30			**Lunch**
1112 FINAL RECD	Wednesday	1:30 – 2:15	Rafael Nogueral	Energy Solutions International	Pipeline control modes and their effect on model-based leak detection The paper explores how a model based leak detection system (LDS) behaves according to the control modes acting on the pipeline. A prototype A to B crude oil pipeline is tested for three leaks; one in the middle and the other two very close to both ends. The LDS is analyzed from the pressure-pressure (PP) model perspective giving emphasis to the differences between the real hydraulic leak behavior and what the model see from the PP perspective. The scenarios are compared to obtain conclusions on better modeling when a leak appears.
1113 FINAL RECD	Wednesday	2:15 – 3:00	George M. Harriott	Air Products and Chemicals	Gas Pipeline Simulation: Leak Detection This presentation reviews the development and application of a leak detection system for long gas pipelines of arbitrary connectivity that contain point resistances to flow. Scaling analysis reveals that inertia is negligible in an isothermal core, leading to a nonlinear diffusion equation for density supplemented by thermal boundary layers at inlets. Small-amplitude linearization is applied to quantify simulation accuracy in the presence of data noise and to reveal dynamic leak signatures. On operating pipelines, the density equation, coupled with compressible point resistance formulae, is solved by a novel finite element method that yields flow directly. Using only data at boundaries, leaks are identified from differences between simulated and measured flows.
		3:00 – 3:15			**Break**
1114 FINAL RECD	Wednesday	3:15 – 4:00	Marc Rousselet, Steinar Berland and Trond Erlend Bustnes	Statoil ASA	Leak detection performance of a commercial Real Time Transient Model for Troll oil pipeline This paper describes a method for quantitative evaluation of Real Time Transient Model (RTTM) systems for leak detection. The North Sea Troll oil pipeline is used as an example, providing a leak detectability curve that is compared with a theoretical inventory uncertainty analysis based on API publication 1130.

Agenda for 2011 Conference

Thursday, May 26, 2011

		8:30			Conference Start
1115 FINAL RECD	Thursday	8:30 – 9:15	Clara Arribas, Juan Seriña	Medgaz Energy Solutions International	Marine pipeline pre-operation hydraulic analysis and training through the use of simulators This paper discusses the key aspects of modeling the Megdez pipeline with a focus on those elements and modules not often found in pipeline simulation. The paper also illustrates specific examples of practical uses of these models in preparation to the pipeline startup and the procedures used during this critical phase of the project.
1116 FINAL RECD	Thursday	9:15– 10:00	Louis Liu Dan Fox	Nicor Gas	Dynamic Pushing – Concept, Computer Simulation and Field Application to Pigging a Low Flow Gas Pipeline Pipeline pigging operation often requires a certain minimum flow rate for an acceptable pig speed. Very low flow rates pose a challenge to gas pipeline pigging due to lack of pushing force for pig movement. However, if a high pressure source is available a process called "Dynamic Pushing" may be used to create sufficient velocities for pigging operation. The current paper explains this concept and demonstrates how to simulate the process using a transient hydraulic computer model. Finally the paper shows a real case of pigging a six mile 36" natural gas pipeline using this method with the guidance of the computer model.
		10:00 – 10:15			Break
1117	Thursday	10:15 – 11:00	Ivor R. Ellul Yugdutt Sharma	Knowledge Reservoir	Can Dynamic Complex Multiphase Phenomena be Modeled?
1118 FINAL RECD	Thursday	11:00 – 11:45	Matt Lubomirsky Sidney P. Santos Zhan Kulzhanov Rainer Kurz	Solar Turbines Petrobras Intergas Central Asia Solar Turbines	Economics of Internal Pipe Coating In this paper, a large diameter pipeline case study is used to evaluate the alternatives of (a) coating versus (b) not coating the pipeline, and the results are presented. The impact of coatings on friction factor is based on actual test data. Based on actual cost data from pipeline coating , derived from a large transnational pipeline project, the impact on overall economics is assessed.
		11:45 – 1:30			Lunch & Chairman's Session
1119	Thursday	1:30 – 2:15	Ed Nicholas	Nicholas Simulation Services	The Impact of the Pipe and the Pipeline Surroundings on the Pipeline Fluid Transients, Line Pack, and Temperature Front Propagation The impact of a pipeline's external thermal environment on

					short term and long term pipeline dynamics is often poorly understood. Modeling decisions are sometimes made based upon the features of user's pipeline model or CPU usage of the computations. However, the choice of the representation of the pipeline thermal environment often affects the accuracy and validity of the modeling results. This paper examines the impact of various thermal modeling assumptions on natural gas and crude oil pipelines of a range of sizes. This paper references recent PSIG papers on thermal modeling and builds upon those results.
1120 FINAL RECD	Thursday	2:15 – 3:00	Baptiste Rossi, Laure Sinègre, Arthur Jacquiau, Jérémy Dalphin, Thierry Renaudie	GDF Suez Mines de Nancy GRTgaz	Dealing with CCGT: An Explicit Dynamic Model This paper presents a simple model that describes the behavior of the gas transmission pipe to the start or stop of one or several combined cycle gas turbines (CCGT). Focusing on the evolution of pressure (in time and in space) in a pipeline with unbalanced in-flows and out-flows, this model provides explicit formulas to understand qualitatively, and to quantify the multiple phenomena at stake without having to complete a full simulation. Those formulas can be of great benefit for dispatchers as well as a strong basis for future decision-helping tools.
		3:00 – 3:15			**Break**
1121 FINAL RECD	Thursday	3:15 – 4:00	Richard G. Carter	GL Noble Denton	Parallel Computation for Simulation Users and Simulation Developers Instead of continued increasing clock speed, for the last few years mainstream computer hardware has advanced by increasing the number of cores. Although use of parallel computers has been considered "normal" in many industries for over 30 years, for historical reasons parallel algorithms have never seen extensive use in the pipeline simulation industry. In this talk we discuss why that must change, how it has been changing, and some interesting paths the future may take.
1122 FINAL RECD	Thursday	4:00 – 4:45	Nghia Truong	DBP Western Australia	The Challenge of Expanding the Capacity of a Probabilistic Pipeline This paper discusses the challenges in planning for capacity expansion of a natural gas pipeline which has capacity services defined by probability of supply and specific interruption limits. It is not only a challenging and time consuming process to model this pipeline, the complexity compounds with the number of combinations for various expansion options.

Agenda for 2011 Conference

		6:00 – 7:30			Reception

Agenda for 2011 Conference

Friday, May 27, 2011

		8:30			Start
1123	Friday	8:30 – 9:15	M. A. Al-Rasheed Ram Wallooppillai Günter Wagner Heribert Scheerer	Saudi Aramco LIWACOM	Real Time Pipeline Management Tool for the Master Gas System (RTPMT-MGS) This paper will present the new pipeline management tool ("MGS-STAT") and will outline how this tool meets the specific requirements for operating a 7Bcf/day natural gas production system. Requirements include online survival time predictions, optimizing rich gas injection in order to meet demand and contractual pressures, and minimize associated costs. The paper will present in detail the implementation procedure, hydraulic design, communication architecture, maintenance process, optimization process, challenges faced and results of the implementation of the pipeline management tool.
1124 FINAL RECD	Friday	9:15– 10:00	Michael Dew Steven Baroni Larry Bowden	Williams Pipeline	Pipeline Efficiency Rating A Method of Rating Pipeline Operational Efficiency The Pipeline Efficiency Rating (PER) was created to provide a simple numeric value that represents the pipeline operational efficiency independent of the amount of gas transported. The PER was designed such that it should be comparable from one time period to another and present the answer to the question: "how efficiently has the pipeline been operating?"
		10:00 – 10:15			Break
1125 FINAL RECD	Friday	10:15 – 11:00	Jeff Cadotte	Union Gas	A Practical Solution to Modeling Well Interference in Pinnacle Reef Storage Reservoirs
1126	Friday	11:00 – 11:45	Donald Freeman Maria Vielma	Pioneer Natural Resources Schlumberger	Steady State Modeling for Raton Basin Low -Pressure Gas Gathering System: Workflow Automation for Rapid Well and Pipeline Analysis Static models have been used in the last two decades to analyze the hydraulic behavior of gas gathering systems. The driving forces for building these models include the need to increase system awareness and enhance production. Building these systems in any production software and keeping them up to date are processes that require expertise and time; the latter depends on the system complexity. Manual data transfer can delay recognition of problems until changes have

					adversely impacted production. This paper describes the implementation of a systematic workflow to build the Raton basin gas gathering system model in PIPESIM* and to control and automate the model data transfer and optimization through Microsoft Visual Basic$^®$ macros. The results demonstrate how the modeling, combined with an automated interface, became an invaluable tool for updating, optimizing, and simulating scenarios for the gas gathering system.
		11:45			**Conference Close**