Pipeline Knowledge & Development,
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Hazardous Liquid Control Room Training Program Syllabus		
Equipment and Components	122 slides	140 minutes
Pipe, coating, meters, valves, pumps, compressors, motor engines, and a myriad of other pieces of equipment comprise pipeline systems. Photographs, drawings, and videos allow students to see what components actually look like. Compressor and pump characteristics and how those characteristics impact pressure and rate management are explained with the help of charts and graphs. This module is especially appreciated by technical people new to the industry as well as by nontechnical professionals as it introduces both groups to the physical building blocks of the industry.		
Hydraulics and Hydraulic Tools	112 slides	114 minutes
Pipeline hydraulics has all to do with understanding pressures and flow rates. The key focus of this class is teaching students the five basic hydraulics tools with include the systems resistance curve, hydraulic gradient, systems profile, pump and compressor curve, and operating point. These tools and how to use them are the focus of this module. It covers fluid properties and behavior, demonstrating the practical aspects of pipeline flow. Intended for those without a technical background, even veteran engineers comment they gain a fuller understanding of why pipelines behave the way they do.		
Control Center Operations	63 slides	75 minutes
Control rooms are the nerve center of the pipeline as control technicians monitor thousands of points; adjusting pressures and directing flow to meet customer needs. From nominations to final delivery, this module covers the control room work flow as it highlights control room tools and challenges. Control room and incident response videos add to this lessons effectiveness.		
Introduction to SCADA and Controls	32 slides	29 minutes
SCADA, communications, and controls are the pipeline's nerves providing multiple inputs from the pipeline and carrying back control commands. From field instruments, station PLCs or computers, to the control room computers and operator consoles, this module provides a broad overview of the entire control scheme from a practical perspective. Students find the scada video particularly interesting		
Introduction to Leak Detection	36 Slides	49 minutes
The two fundamental types of leak detection, internal and external are discussed along with sensitivity, accuracy, reliability, and robustness – the four key criteria. Key challenges of oil leaks and leak detection versus gas are covered during this module which makes extensive use of hydraulic gradients. This module simplifies and explains what to many is the "black art" of leak detection.		

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Oil Power and System Optimization	28 slides	25 minutes
Electrical Power is the largest single expense for most oil pipeline companies. Using actual power bills and examples, this module examines operating and station control practices with a focus on reducing energy usage per barrel shipped. It includes discussions of basic hydraulics along with station control and system and pump curves. Coupled with effective communication between schedulers, control technicians and operators these tools can the power needed to pump the same number of barrels.		
Applied Pipeline Hydraulics	46 slides	61 minutes
Through the use of 5 case studies each following batches of varying densities along a pipeline with 4 pump station, students learn to apply practical hydraulic principles. Some knowledge of hydraulics, hydraulic gradients, and centrifugal pump characteristics is a prerequisite. *Introduction to Hydraulics* combined with *Equipment and Components* provide the background needed for students who do not have the knowledge but would like to attend the course. For groups which have not already attended the *Introduction to Hydraulics* and *Equipment and Components* lessons, and do not have the request background knowledge, 60 minutes and 43 slides can be added to provide students with the requisite background knowledge.		
Abnormal Operations	39 slides	60 minutes
Drawing on pipeline accident investigations conducted by the National Transportation Safety Board this course reviews past accidents in small working groups with are each assigned an accident to review. The small group reports back to the larger group which then discusses each accident in turn. Learning from these past situations prepares students to look into their assets and operations more closely to prevent accidents and respond appropriately when they must.		