BUILDING CAPACITY TO MANAGE PRESSURE

Expanded Event Factors Timeline

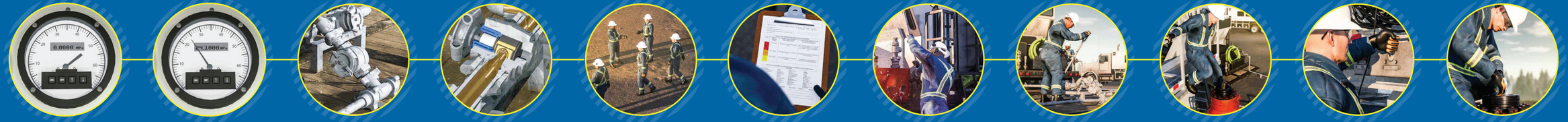
ENERGY SAFETY CANADA

This timeline is for educational purposes to encourage industry to investigate incidents with a stronger focus on human and organizational factors.

ORGANIZATIONAL CAPACITY (ORGANIZATIONAL INCIDENT FACTORS) →

Valve leaking procedure	Dynamic work		Pressurize in line remains				Normalization of pressure		Energy isolation LSR	
Stressing a vulnerable system	Managing Change	Stressing a vulnerable system	Crew handover program	Differing ideas of what a safety meeting is	Exterior gauge	Extra valve added	Test bar design (human factors)		Exterior gauge	
			Walk the line competency	New rig manager			Line of fire LSR		Exterior BOP controls	Capacity to fail safely
							Line of fire training or procedures		Specific procedures	

OBSERVABLE ACTIONS



Failed low pressure test	Proceed to high pressure test	Valve added	Leaking valve left in place	Crew change	Deferred safety meeting	Pumper pressure release	Manifold check	Worker climbs on BOP	Zero pressure not verified*	Worker struck by test bar

PSYCHOLOGICAL CAPACITY (HUMAN INCIDENT FACTORS) →

High pressure solves leaks?	Find problem	Leaking internally	Get home (14 hrs.)	Rig manager: keep client happy	Complete safety-critical task	Complete safety-critical task	Adapt to find a solution	Pumper pressure release	
	Solve problem			Wellsite supervisor: save time		Different mental picture		Manifold check	
								Catch up	

Based on the concepts of Todd Conklin, Andy Baker and Martha Acosta. *Denotes a counterfactual

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