


		Hazop Worksheet					
Project Company	API Manufacturing Plant Sterling Chemical Malta Ltd		Session n° Date	06/11/2013			
Unit System/Section Description	Production area (L1 e L2 lines) Condensation		Chairman/secretary Team members Drawings	Taviani Cristiano Sgrò Giuseppe (Sterling); Topa Fabrizio (Trecon); Paci Andrea (Trecon), Bolognini Mauro (Trecon). 0000-2012-000-P01-00 Schema P&I Linea 1			
Facility	Condensator						
Hazardous characteristics	Flammable substance presence						
Key word	Deviation	Cause	Deviation detection	Possible effects/consequences	Provided protection	Top Event identified	
More/High	Vapours flow rate	Rise pressure production / vapor in the reactor	Pressure gauge	None (greater heat exchange inside condensator)	None	None	
	Vapours temperature	Temperature rise inside reactor	Temperature gauge	None (greater heat exchange inside condensator)	None	None	
	Vapours pressure	Rise pressure inside reactor	Pressure gauge	Possible overpressure in the condenser or in barrels of condensate liquid storage	Presence of safety rupture disc. Mangement procedure. Regulation system and emergency block system.	None	
		blocking downstream condensator		Opening safety rupture disc		Top Event 14	
	Condensate recirculation flow-rate or pressure	Vapours rise flow rate inside to reactor	None	Flooding of the condensator and it possible overpressure	Mangement procedure. Regulation system and emergency block system.	None	
Nitrogen flow-rate	High pressure inside nitrogen circuite	Pressure gauge	Opening safety rupture disc	Presence of safety rupture disc. Mangement procedure. Regulation system and emergency block system.	Top Event 14		
Less/Low	Vapours flow rate	Decrease vapour production inside reactor	Pressure gauge	None (less condensed)	Mangement procedure. Regulation system and emergency block system.	None	
		Clogging vapours line		Possible overpressure in the reactor		None	
		Partial breakage vapour's lines		Vapours escape		Top Event 15	
	Vapour temperature	Lower temperature in reactor	Temperature indicator	None (best condensation)	None	None	
	Vapours pressure	Lower pressure in reactor	None	Air entry into the condenser possible flammable mixture generation	Mangement procedure. Regulation system and emergency block system.	Top Event 16	
		Brackage vapour's lines		Vapours escape		Top Event 15	
	Condensate recirculation flow-rate or pressure	Less vapours flow rate in the reactor	None	Less cooling vapors and more fouling of the condenser	Mangement procedure. Regulation system and emergency block system.	None	
		Brackage ricircle's line		Spilling liquid		Top Event 17	
Nitrogen flow-rate	Low pressure inside nitrogen circuit	Pressure gauge	Inerting means preventing the initiation of combustion of a flammable or explosive atmosphere insufficient	Mangement procedure. Regulation system and emergency block system.	Top Event 12		
No	Vapours flow rate	No-production vapours in the reactor	None	None (Lack condensation)	Mangement procedure. Regulation system and emergency block system.	None	
		Clogging vapours line		Possible overpressure in the reactor		None	
		Vapours line rupture		Vapours escape		Top Event 15	
	Condensate recirculation flow-rate	Clogging circulation pipe	None	Less cooling vapours and more condensator fouling with spillage liquid	Mangement procedure. Regulation system and emergency block system.	Top Event 17	
		Closed intercept valve					
	Nitrogen flow-rate	Recirculation pipe rupture	Pressure gauge	Lack inerting means preventing the initiation of combustion of a flammable or explosive atmosphere	Mangement procedure. Regulation system and emergency block system.	Top Event 13	
Operator's error (closed nitrogen valve)							
Valve malfuction							
Other	Vapours composition	Temperature rise	None	Out off specification	Weighing and loading/unloading raw material inside to reactor	Top Event 8	
		Temperature decrease		Uncontrolled chemical reaction		Top Event 9	
		different reagent Loading into the reactor					