

CHEMICAL PROCESS INSTRUMENTATION CARSL Safety Audit Checklist /Hazard Guidline

Cholamandalam MS Risk Services Ltd.

Serial No.	CPI Checkpoint	Hazard Ranking
1	Are critical ESD / trip loops identified?	
2	Was HAZOP carried out after plant / unit modification / addition?	
3	Last HAZOP recommendations implementation status? Percentage of implementation.	
4	Is the above a MoC procedure requirement and is this defined?	
5	Isolation valves affecting process measurement kept locked?	
6	Are the maintenance schedules for critical loops made separately?	
7	Are all instruments tagged / instrument tag number engraved with service details, etc?	
8	Is physical inspections carried out for critical field instruments, including wiring terminations?	
9	Is review of redundancy level determined based on process safety?	
10	Is the collective fail-safeness of the system ensured?	
11	Surge protection for field instruments in place?	
12	Specific gravity of stored liquid considered while Level switch / indicator calibration?	
13	EX 'i' type on-line field calibrators used in flammable areas?	
14	Risk-Based preventive maintenance schedules arrived at based on MTBF / MTBR failure rates and event probabilities?	
15	How periodic is the optometric tests done for instrument technicians?	
16	Are all critical trip loop separately identified (at wiring terminations, PLC cabinets, etc)?	
17	Are the critical ESD loop cables provided with passive fire protection measures?	
18	Are the ESD cables exposed to excessive	

	heat conditions (near furnace, boiler, etc.) or passing under gas lines, steam lines/traps, high-pressure vessels, etc?	
19	Any plans to adopt IEC 61508 or SIL levels?	
20	Field instruments for corrosive chemicals – internally coated?	
21	Is periodic checking of control valve internals for erosion, proper functioning, etc. (depending on flow rate, type of chemical, etc.) carried out?	
22	Effects of extreme atmospheric conditions on instrumentation (accuracy, etc.)?	
23	Routing of ESD cables in two different routes carried out considering potential failures in mind?	
24	Change of critical parameter settings / override facility at the DCS console? Password protection, etc.	
25	Calibration periodicity of master instruments used in the calibration room defined and carried out?	
26	Positioning of critical instruments (near vents, drains, PSVs, flanges, etc.)	
27	Is all field instrumentation approachable without obstructions?	
28	Maintenance schedules of UPS, Battery banks, PLC systems, DCS consoles, etc.	
29	Is ROL (Re-Order Level) defined & maintained for critical instruments, I/O modules, etc.?	
30	Review of logic for loop diagrams as part of MoC carried out?	
31	Are all changes reflected in the as-built drawings?	
32	Are all field instruments appropriate to the type of atmospheric conditions exposed (flameproof, intrinsically safe, IP /NEMA)?	
33	Is review of response time between instruments and PLC /DCS system reviewed periodically?	
34	DCS / SCADA software along with the set parameter detail stored in a separate room in a fire safe cabinet?	

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Hazard Rank	Indicated as	Checkpoint Interpretation / Guideline
High	RH	Critical issue. Immediate Corrective Action may be suggested
Medium	RM	Comparatively less critical or medium hazard category. Corrective Action is required at the next available opportunity
Low	RL	Not critical or low hazard level. Adherence to these recommendations would be helpful in improving the risk levels in future.

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