

INDIVIDUAL ACT		SUPERVISORY CONTROLS		PROCESS CONTROLS		ENGINEERED CONTROLS		CULTURAL CONTROLS	
0200	PERSONNEL WORK PRACTICE	0100	VERBAL COMMUNICATIONS	0600	TRAINING/QUALIFICATION	0400	INTERNAL ENVIRO CONDITIONS	1100	MANAGEMENT DIRECTION
0201	Self-checking not used/ineffectively applied	0101	Shift handover inadequate	0601	Training not provided on how to perform a task	0401	Lighting inadequate	1110	Policies, official guidance (standards), expectations, administrative controls: Not developed
0202	System alignment/isolation not verified	0102	Pre-Job briefing inadequate/not performed	0602	Training not provided on how to use special equipment or tools	0402	Housekeeping inadequate	1120	Policies, official guidance (standards), expectations, administrative controls: Not enforced
0203	Required procedures, drawings, or other references not used	0103	Message misunderstood/misinterpreted	0603	Training not provided on relevant system(s)/components	0403	Temperature too hot/cold	1130	Policies, official guidance (standards), expectations, administrative controls: Not adequate
0204	Administrative controls circumvented or intentionally not performed	0104	Communications equipment inadequate or not available	0604	Training not based on current plant requirements	0404	Excessive noise level	1200	COMMUNICATION OR CO-ORDINATION
0205	Conditions not verified prior to work	0105	Receiver not listening	0605	Demonstration of task proficiency not required prior to qualification	0405	High humidity	1210	Policies, official guidance (standards), expectations, administrative controls not communicated effectively within the organisation
0206	Task not adequately researched prior to start	0106	Communications incorrect/inadequate	0606	Insufficient refresher training	0406	High radiation	1220	Familiarity of workers with relevant policies and/or official guidance not verified
0207	Unauthorized material substitution	0107	Internal team communication inadequate	0607	Training not attended	0407	Cramped work space	1230	Inadequate co-ordination/communication between departments
0208	Inadvertent bumping, stepping on, or damage to equipment	0108	Inter-team communication inadequate	0608	Training standard not adequate	0408	Distractions	1240	Coordination/communication not sufficiently promoted by management
0209	Radiological/ALARA work practices not followed	0109	Supervisor not notified of problem	0609	Training not provided to required level of competence for task	S0409	Fire Burning Smoke Explosion	1250	Inadequate communication between management and plant staff, inadequate feedback from plant staff to management, employee concerns fail to reach management attention
0210	Inattention to detail	0300	WORK SCHEDULE	0610	Training not provided in personnel work practice	S0410	Dropped Load , High Energy Impact,	1260	No prompt responses to employee concerns
0211	Independent checking not used or ineffectively applied	0301	Excessive overtime	0611	Shortfall in on-job training/experience	S0411	Pressure	1300	MANAGEMENT MONITORING & ASSESSMENT
0212	Unsafe working practices applied	0302	Called in during unsocial hours	0612	Inadequate definition of required qualifications	S0412	Poor ventilation	1310	Inadequate level of management involvement
0213	Personal Protective Equipment not used/worn	0303	Working continuously for considerable number of hours	0700	WRITTEN PROCEDURES AND DOCUMENTS	S0413	Untenable / toxic / noxious / atmosphere	1320	Inadequate establishment/support of programmes or processes
0214	Improper tools/equipment used	0304	Working without rest day for considerable time	0701	No document available	S0414	Electromagnetic interference	1330	Inadequate monitoring of the effectiveness of programmes or processes
0215	Failure to maintain written logs	0305	Frequent changes of shift	0702	Technically incorrect	S0415	Vibration	1340	Inadequate monitoring of results of decisions/assignments
0216	Inappropriate habits developed through group pressure/culture	0306	Time pressure to complete task	0703	Technically incomplete	S1900	EXT ENVIRONMENTAL CONDITIONS	1350	Inadequate assessment of the effectiveness of corrective actions
0217	Lack of questioning attitude	0307	Unfamiliar work cycle	0704	Cautionary information not included	S1901	Lightning Strikes	1360	Inadequate assessment of personnel behaviour and performance
0218	Violation of policies/rules/procedures	0800	SUPERVISORY METHODS	0705	Not up to date with plant design	S1902	Flooding/Tsunami	1370	Information or monitoring system does not give accurate and in-time information
1000	PERSONAL FACTORS	0801	Duties and tasks not clearly explained	0706	Not formally stated	S1903	Tides	1400	DECISION PROCESS
1001	Fatigue	0802	Progress not adequately monitored	0707	Unclear or complex wording	S1904	Wind Loading/storm/tornado	1410	Officially designated responsibilities and accountabilities unclear
1002	Stress/perceived lack of time/boredom	0803	Supervision levels not decided prior to task	0708	Format deficiencies	S1905	Earthquake	1420	Decision process too lengthy/time consuming
1003	Skill of the craft less than adequate/not familiar with job performance standards	0804	Supervisor too involved in tasks	0709	User aids deficient/not provided	S1906	Ambient temperature high/low	1430	Decision based on insufficient information
S1004	Incapacitated due to personal health reasons	0805	Inappropriate balance between timescale and standards	0710	Inadequate technical review process	S1907	Heavy rain or snow	1440	Risks and consequences of decision not identified or assessed before decision made
S1005	Substance sensitivities/allergy	0806	Standards not adequately communicated	0711	Responsibility for following procedure not stated	S1908	Loss of Grid, station blackout	1450	Management objectives did not encompass known problems
S1006	Self-medication/prescription drug use	0807	Control of contractors inadequate	0712	Inadequate safety assessment provided	S1909	Loss of Heat Sink	1460	Management objective did not reflect a relevant constraint
S1007	Emotional overload	0808	Frequent task re-allocation	0900	WORK ORGANISATION	S1910	Landslide	1470	Inadequate operating experience feedback process (corrective actions not defined, Inadequate or not implemented promptly, root causes of known problems not addressed)
S1008	Extreme concentration / Perception demands/mental task overload	0809	Inappropriate selection of staff for task	0901	Planning done without site visit	S1911	Ext. Hazards: Aircraft, boat, traffic, Mist , Fog , Reduced Visibility	1480	Improvement campaigns ineffective
S1009	Excessive pressure	0810	Safety aspects of task not emphasized	0902	Special conditions or requirements not identified	0500	HUMAN-MACHINE INTERFACE	1490	Operational decision is not adequate
S1010	Alcohol or drug abuse			0903	Co-ordination of all relevant on-site departments not achieved	0501	Label missing/inadequate	1500	ALLOCATION OF RESOURCE
S1011	Suitable guidance incorrectly Used			0904	Work initiated prior to ensuring all skills, parts, tools, instruments are available	0502	Interface design inappropriate for task	1510	Insufficient resources allocated for identified objective (includes resources such as training, supervision, documentation, tools, materials and equipment)
S1012	Fear/Phobia			0905	Job walk through not performed	0503	Controls provided not adequate	1600	CHANGE MANAGEMENT
S1013	Poor judgment			0906	Work package did not address all administrative requirements	0504	Alarms provided not adequate	1610	Need for change/further change not identified
S1014	Personal Goals v Safety			0907	Scheduling conflicts not identified	0505	Alarm masking/cancelling	1620	Change not implemented in adequate timescale
S1015	Slip- Action had outcome not as planned			0908	Task or routine not assigned	0506	Too many standing alarms	1630	Inadequate resourcing of change
S1016	Lapse/Oversight/Distract			0909	Too few workers allocated to task	0507	Too many incoming alarms	1640	Consequences of change not adequately assessed
S1017	Spatial Awareness			0910	Too few workers of the correct trade/specialism	0508	Indications provided not adequate	1650	Change-related training / briefing inadequate
S1018	Lack of understanding			0911	Co-ordination of relevant on- and off-site departments not achieved	0509	Inadequate signage or barriers	1660	Change-related documentation alteration inadequate
				0912	Planning of parallel tasks inadequate	2000	DESIGN CONFIGURATION ANALYSIS	1670	Change-related equipment provision inadequate
				2200	MAINT./TESTING/SURVEILLANCE	2001	Original design inadequate	1680	Results of change not monitored for correctness
				2201	Corrective maintenance did not correct problems	2002	Design documentation/prints inadequate	1690	Changes to plant equipment, procedures and processes not systematically planned and implemented
				2202	Other problems noted during the performance of maintenance/testing not corrected	2003	Design analysis deficiency	1691	Change objectives, responsibilities and implementation schedules are not clearly communicated
				2203	Preventive maintenance inadequate	2004	Component selection inadequate	1700	ORGANISATIONAL/SAFETY CULTURE
				2204	Maintenance performed incorrectly	2005	Material selection inadequate	1710	Punitive responses to genuine slips or mistakes
				2205	Testing not performed as required	2006	Unauthorized or un-reviewed modification	1720	Lack of blame-free reporting culture
				2206	Post-maintenance testing inadequate	2007	Inadequate review of design changes	1730	Staff do not have "do it right first time" attitude
				2207	Post-modification testing inadequate	2008	Field walkthrough input to design inadequate	1740	Taking of short-cuts allowed/tolerated
				2208	Retest requirements not specified	2009	Historical design does not meet current requirements	1750	Low morale among plant staff
				2209	Retest delayed	2010	Inappropriate reliance on human action	1760	Recurrent violation of rules
				2210	Test acceptance criteria inadequate	2011	Deficiency in engineering of modification	1770	General lack of questioning attitude, weaknesses exist in identifying or raising concerns relating to nuclear safety
				2211	Test results review inadequate	2012	Inadequate risk analysis performed	1791	Lack of conservative approach in control room
				2212	Surveillance schedule not followed	2013	Failure Mode or risk or consequences of a failure is no adequately taken into account	1792	Lack of teamwork in control room
				2213	Situational surveillance not performed	2014	Common cause failure vulnerability is not adequately considered or analysed	1800	Weakness in or lack of defence –in-depth and risk management practices related to plant safety, reliability or mitigation of events, including severe accidents
				2214	Required surveillance/test not scheduled	2015	Separate function redundancy or diversification is insufficient inc. cables.	1810	Lack or weaknesses in raising nuclear safety concerns
				2215	Equipment outside acceptance criteria	2100	EQUIPMENT SPECIFICATION, MANUFACTURE, & CONSTRUCTION.	1820	MANAGEMENT OF CONTINGENCIES
				2216	Incorrect parts/consumables installed/used	2101	Material used inadequate	1830	Organisation unprepared to handle unforeseen events
				2217	Failure to exclude foreign material	2102	Manufacturer fabrication/construction inadequate	1840	No management oversight of problem solving by workers for unforeseen events
				2218	Incorrect restoration of plant following maintenance/isolation/testing	2103	Specifications provided to manufacturer inadequate	1840	Weakness in emergency preparedness
				2219	Parts received from vendor /supplier/manufacturer for which the acceptance testing by the vendor/supplier/manufacturer was falsified	2104	Substitute parts/materials used do not meet specifications		Weakness in contingency planning
				2300	EQUIPMENT PERFORMANCE	2105	Lack of proper tools/materials used during installation		
				2301	Equipment operated outside of design specifications	2106	Installation workmanship inadequate		
				2302	Ageing of component	2107	QA requirements not used or met during procurement process		
				2303	Known problems not corrected	2108	Equipment installed does not meet all codes/requirements		
				2304	Degraded sub-component contributed to failure	2109	Post procurement requirements not used/performed		
				2305	Component monitoring inadequate	2110	Counterfeit Item /Fraudulent Item		
				2306	Component beyond expected lifetime	2111	Packaging deficiencies and transport damage		
				2307	Externally damaging condition not properly evaluated or correlated				
				2308	Equipment erosion / corrosion				
				2309	Failed within expected lifetime				

IMPORTANT NOTES

Codes are based on WANO Operating Experience Causes and Causal Factor WANO Codes (Page 44 onwards)

Codes in *italics* denoted with an "S" are OELG specials to match the specific needs of some OELG members.

Within each main code group, there are more detailed codes to be more precise in identifying the root cause and causal factor. If none of these codes belonging to the main code group fits your requirements, select the main group code number.

Definitions:

ROOT CAUSE: The fundamental causes(s) that, if corrected, will prevent recurrence of an unusual event or adverse condition.

CAUSAL FACTOR: Cause(s) that, if corrected, would not alone have prevented the event, but are important enough to be recognised as needing corrective action to improve the quality of the process or product

References:

MN-01 WANO Operating Experience Programme Reference Manual. (Revision 7, June 2016)

OELG Cause Codes User Guide

Version 1