Human factors self-assessment guide and tool for safety management systems at petroleum and major hazard facility operations

Disclaimer

Use of this tool and associated guidance may not be necessarily sufficient for an operator to meet their legal obligations. The information contained in this publication is provided in good faith and believed to be reliable and accurate at the time of publication. However, the information is provided on the basis that the reader will be solely responsible for assessing the information and its veracity and usefulness.

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Reference

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Scope

This self-assessment tool and guide to using the tool have been developed to assist petroleum and major hazard facility operators in designing and maintaining safety management systems that integrate human factors. It is recommended that the guide, *Human factors fundamentals for petroleum and major hazard facility operators*, is read prior to using the self-assessment tool.

The self-assessment tool can be used to help identify strengths and opportunities for improvement. There is no obligation for petroleum and major hazard facility operators to use this tool in order to demonstrate compliance with the relevant legislation. Petroluem and major hazard facility operators may demonstrate compliance with the relevant legislation through other ways.

Legal duties

Petroleum licensees, operators and major hazard facility operators have specific objectives for the safe operation of major hazard facilities, pipelines and onshore and offshore facilities to prevent process safety events, injury or harm to personnel and other protected persons within the licensed area under the relevant legislation.

- *Dangerous Goods Safety Act 2004*
- Dangerous Goods Safety (Major Hazard Facilities) Regulations 2007
- *Petroleum and Geothermal Energy Resources Act 1967*
- Petroleum and Geothermal Energy Resources (Management of Safety) Regulations 2010
- *Petroleum Pipelines Act 1969*
- Petroleum Pipelines (Management of Safety of Pipeline Operations) Regulations 2010
- *Petroleum (Submerged Lands) Act 1982*
- Petroleum (Submerged Lands) (Management of Safety on Offshore Facilities) Regulations 2007
- *Work Health and Safety Act 2020* (pending proclamation)

Using the self-assessment tool

Integrating human factors is integral to a robust safety management system. The self-assessment tool sets out areas for petroleum and major hazard facility operators to consider when integrating human factors into a safety management system.

The tool assesses the level of human factors integration within a safety management system. It can be used to identify strengths and opportunities for improvement.

The tool is not definitive and should be only used as an indicator of areas that may need improvement. Operators may wish to customise the tool to their operations by including additional areas for assessment.

> The self-assessment tool can be completed as a whole, or sections of the tool may be completed as separate components.

As with the management of any safety process, seek expert advice when the limits of internal expertise have been reached.

Who should complete the self-assessment tool

It is important those undertaking the self-assessment have access to information about the safety management system, work environment and work processes, and knowledge and understanding of human factors and potential performance-shaping factors. As this self-assessment tool requires access to information from different business areas, input from operational groups and subject matter experts (e.g. work health and safety advisors, human resources consultants, workers' compensation and rehabilitation consultants, and human factors specialists) is recommended.

Consider appointing a project sponsor or champion who has decision-making authority at a senior level. A project sponsor or champion can assist with the successful completion of the self-assessment by visibly supporting the project and providing assistance to overcome challenges to obtaining information from different business areas.

Collecting evidence

Collecting evidence for this self-assessment tool is similar to collecting evidence for other assessments that focus on process safety, and occupational safety and health. The main difference is that performance-shaping factors may not be as directly observable as physical hazards and risks. Different types of evidence may be required to demonstrate human factors have been addressed. There are three categories for collecting evidence for this self-assessment tool:

- **interviewing people** including managers, supervisors, workers, contractors, and health and safety representatives
- **reviewing documents** including operating manuals, policies and procedures; records (e.g. work instructions, completed forms and permits, reports, registers); and reports or other data (e.g. risk assessments, surveys, functional task analysis)
- **observing work tasks** being performed and conditions within the workplace (take photographs, where possible, to use as a record).

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Where possible, obtain evidence from all three categories to verify findings.

Collecting evidence to complete the self-assessment tool will generally require an examination of the following areas:

- **leadership commitment:** e.g. sufficient resources (time, finances, people) and support allocated for health and safety management
- **environment** where the work is conducted; e.g. lighting, noise, thermal comfort, atmospheric contaminants, vibration
- **methods or systems of work:** e.g. how work is designed and managed with reference to known and foreseeable safety-critical tasks and major incident or accident events
- **communication:** e.g. 'top-down' communication such as communication about organisational changes and changes to the work, and deviations from normal conditions; and 'bottom-up' communication such as worker reports of hazards and incidents, worker feedback on improvement
- **equipment** being used by the workforce; e.g. plant, machinery, control panels
- **organisational factors** that exist at the time of the assessment; e.g. workplace culture, restructuring, high staff turnover.

Examples of evidence that can be collected for each section of the self-assessment tool are provided in Table 1.

Table 1   Guideline intent for the human factors self-assessment tool

Item	Section	Guideline intent	Examples of evidence
1.1 – 1.10	Managing human reliability	Conditions within the system which increase or decrease the likelihood of human error are identified. Contributing performance-shaping factors in major accidents, incidents, injuries and near misses are controlled to ALARP or SFARP to prevent future similar occurrences.	• Human performance principles and language visibly integrated into safety management system; e.g. in pre-defined leadership expectations, behaviours and vision, existing policies and ongoing leadership communications via email or verbally • Human reliability assessment reports • Documented identification of safety-critical tasks and required actions which includes human intervention • Job aids for safety-critical tasks, such as checklists, safety-critical task procedures, decision-making tree and guides • Documented evidence that demonstrates consideration of how workers could initiate, escalate or halt an event sequence • Documented human error analyses for safety-critical tasks that identify potential types of human error that may occur (e.g. unintentional failures, intentional violations, mental failures and physical failures) and the factors that are likely to influence the frequency of occurrence (e.g. training and competence, workload, human-machine interaction) • Bow-tie diagrams • Safety management system documentation • HAZIDs • HAZOPs • Documented task observation • Audit reports for procedure compliance • Safety-critical task analysis • Major accident event analysis • Completed accident/incident investigations • Incident investigation procedure • Documented evidence of training materials, training records, induction records, and documentation of training in policies and procedures that relate to human factors/human error • Evidence that improvement opportunities are proactively identified for safety-critical tasks during normal work; e.g. learning teams, post job debriefs, or end of project reviews • Discussions with leaders, senior management, health and safety representatives (HSRs) and workers • Evidence the hierarchy of control has been applied; i.e. engineering controls are prioritised over human interventions

Item	Section	Guideline intent	Examples of evidence
2.1 – 2.7	Useable procedures	Fit-for-purpose procedures are developed and maintained in consultation with the end-user to minimise human error to ALARP or SFARP and ensure effective safety performance.	• Documented procedure for identifying which safety-critical tasks require written procedures • Documented procedures are available for the operator's range of activities (i.e. maintenance operations, plant start-up and shutdown, plant operation, training and competency arrangements) • Job aids for safety-critical tasks, such as checklists, safety-critical task procedures, decision-making tree or guides are readily available and reflect actual practice • A visual inspection of hard copy procedures and electronic procedures to determine if they are the same • Written documentation to demonstrate consultation with the workforce has occurred (e.g. minutes, toolbox meetings, emails) • Discussions with operators about whether the operational procedures outline the current process they are performing (to identify any gaps between work-as-done versus work-as-imagined) • Where procedural deviations were identified (e.g. during incident investigations), the focus is on learning and improving to identify system level causes, rather than blaming and punishing the individuals involved in non-compliances • Compliance audit reports • Discussions with leaders, senior management, HSRs and workers
3.1 – 3.6	Training and competence	Training and competencies for safety-critical roles, tasks and responsibilities are identified, assessed and managed to minimise human error to ALARP or SFARP and ensure effective safety performance.	• Documented competency assurance framework which covers definition, acquisition, verification, and maintenance and improvement of competencies • Competency matrix for safety-critical roles • Training needs analysis • Functional job analysis • Management of change process and written procedure • Documented evidence of training materials, training records, qualifications and induction records • Compliance audit reports • Discussions with leaders, senior management, HSRs and workers

Item	Section	Guideline intent	Examples of evidence
4.1– 4.6	Staffing and workload (including supervision)	Appropriate staffing levels, work demands, and supervision are provided to ensure effective performance of safety-critical tasks.	• Documented assessment of the number of staff and experience levels, including supervision, required to operate safety • Safety-critical task analysis • Functional job analysis • Competency matrix for supervision roles • Documented procedure for fatigue risk management (includes managing overtime/ extended rosters) • Documented risk assessment for organisational changes that result in a reduction of personnel • Documented compliance audits • Discussions with leaders, senior management, HSRs and workers
5.1 – 5.6	Management of change	The indirect and direct effects of proposed changes, the change process itself and the transition are identified, assessed and performance-shaping factors are managed to ALARP or SFARP to ensure effective safety performance.	• Management of change procedure which outlines clear objectives, leadership responsibilities, and a structured process • Documented change management plans • Documented communication of change plan • Written correspondence to demonstrate consultation with workforce (e.g. toolbox minutes, meetings, emails) • Documented risk assessments for the change and the change process, including impact of human factors • Documentation that demonstrates training and competency requirements were reviewed as part of the management of change • Documented monitoring and review of change has occurred • Discussions with leaders, senior management, HSRs and workers • Consideration of unexpected automation/robot interactions with humans • In situations where communication is critical, structured communications processes are implemented and reviewed regularly for assurance • Demonstration of end user engagement and collaboration as part of defined process

Item	Section	Guideline intent	Examples of evidence
6.1 – 6.6	Safety-critical communications	Structured communication processes are implemented and reviewed regularly to ensure effective safety-critical communication occurs in situations where effective communication must be assured.	• Permit-to-work system and completed examples • Shift hand over communication procedure and documented examples • Emergency response communication procedure • Maintenance communication procedure • Documented records that contractors, temporary staff and visitors receive major hazard information (e.g. health and safety induction, training records) • Safety alerts, toolbox meeting minutes, health and safety noticeboards • Documented training records and competency assessments • Documented reporting policy and procedures (i.e. safety and health accident/incident reporting, grievance reporting and resolution, complaints handling) • Hazard reporting form includes prompts to consider performance-shaping factors as contributing factors • Workplace inspections checklist includes prompts to consider human factors • Evidence that improvement opportunities are proactively identified for safety-critical tasks during normal work (e.g. learning teams, post job debriefs, or end of project reviews) • Safety and health reporting database/ dashboard • Discussions with leaders, senior management, HSRs and workers

Item	Section	Guideline intent	Examples of evidence
7.1 – 7.12	Designing for people	Interactions between operators and machines have been identified, assessed and contributing performance-shaping factors are controlled to ALARP or SFARP during design and on a regular basis during post-implementation to ensure effective safety performance. Human factor principles have been applied to the design and operation of alarm management systems to reduce the risk of human error to ALARP or SFARP and ensure effective safety performance. Environmental hazards have been identified, assessed and controlled to reduce the risk of harm to health to ALARP or SFARP and ensure effective safety performance. Jobs are designed in accordance with good work design principles to support the mental health and wellbeing of the workforce and ensure effective safety performance.	• Documentation that shows how human factors will be integrated during design and construction of projects and equipment • Documented safety-critical task analyses • Written procurement procedure for machinery includes an ergonomic assessment of machinery prior to procurement • Written procedure for the design and procurement of machinery considers the effects any emissions from the machinery may have on the operator or on the work environment • Ergonomic assessment of machinery assesses a range of interactions between operators and machinery when installing, operating, adjusting, maintaining, cleaning, dismantling, repairing, or transporting equipment • Documented assessments of displays, controls, actuators and signals demonstrate human factors have been considered • Documented risk assessments demonstrate human factors have been considered • Competency records for alarm management system • Alarm management design documentation • Alarm management system performance reports • Written alarm list can be produced readily by operator, and operator can explain the alarm list and required process • Documented assessment of emergency arrangements • Documented risk assessments demonstrate environmental hazards (i.e. thermal comfort, lighting, noise, vibration, atmospheric contaminants) in the work environment have been considered • Functional job analysis which considers physical, cognitive and emotional demands of the work, task duration and context, and physical work environment • Risk assessments of psychosocial hazards have been conducted and hazards controlled to ALARP or SFARP • Discussions with leaders, senior management, HSRs and workers

Item	Section	Guideline intent	Examples of evidence
8.1 – 8.9	Fitness for work	Physical and psychological fitness for work factors have been identified, assessed and controlled to ALARP or SFARP to reduce the risk of harm to health and ensure effective safety performance.	• Written fitness for work (FFW) policy and procedure considers physical and psychological fitness for work • Written FFW policy and procedure states that both work-related factors and personal factors can contribute to mental health and wellbeing • Written FFW policy and procedure outlines the process for assessment/evaluation and controls such as removal to a safe work area, evacuation for medical evaluation, and options for an escorted evacuation from site to a safe work area or medical evaluation • Documented evidence that a competent person is the delegated authority for the medical evaluation (e.g. records of medical practitioner registration, health professional registration) • Dry camp policy • Information provided to workers on consumption of drugs and alcohol • Results of compliance audits and FFW test results • Records of training and training content • Fatigue risk management policy and procedure • Functional capacity assessment records • Job descriptions which clearly define functional requirements of physical, cognitive and emotional tasks • Written policy and procedure for reporting absences from work. Absences may be a result of sick leave, fitness for work issues and personal leave • Welfare check procedure • Procedure for taking sick leave while staying in camp • HSRs and supervisors can be consulted to determine their awareness and knowledge of the procedures • Written communication with workers, toolbox meeting minutes, occupational health and safety noticeboard • Health and safety committee meeting agenda and minutes • Discussions with leaders, senior management, HSRs and workers

Item	Section	Guideline intent	Examples of evidence
9.1 − 9.8	Health and safety culture	The organisation's health and safety culture is regularly assessed and controls are implemented to support the development and maintenance of a positive, inclusive culture that is committed to health and safety.	• Statement of commitment to health and safety from senior management • Health and safety policy • Written documentation that demonstrates senior management have key performance indicators regarding human factors (e.g. performance appraisals, position descriptions, engagement with workers) • Health and safety is an agenda item at leadership and senior management meetings • Health and safety budget demonstrates adequate resources, funding and personnel have been allocated • Position/job descriptions allocate time and duties to health and safety activities • Records of training attendance and training content • Workforce survey results (e.g. engagement surveys, culture surveys) • Investigation reports into accidents and incidents demonstrate human factors is considered as part of the investigation methodology • Hazard reports • Compliance audit reports • Health and safety committee meeting agenda and minutes • Management meeting records • Toolbox meetings • Discussions with leaders, senior management, HSRs and workers
10.1 − 10.7	Maintenance, inspection and testing	The risk of human error is identified, assessed and controlled to ALARP or SFARP during maintenance, inspection and testing activities to ensure effective safety performance.	• Maintenance, inspection and testing budget demonstrates adequate resources, funding and personnel have been allocated • Maintenance schedules • Accident/incident investigation reports involving maintenance, inspection and testing activities • Competency and training records • Documented risk assessments • Documented contingency plans • Job aids for safety-critical tasks such as checklists, safety-critical task procedures and work instructions • Permit-to-work system and compliance audits • Documented independent verification / second party verification checks for safety-critical tasks • Management of change procedure • Isolation procedure • Maintenance records and documented maintenance communication at shift handover • Discussions with leaders, senior management, HSRs and workers

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Assessment ratings

A rating scale is provided to assist operators assess the level of human factors integration into safety management systems. The ratings refer to the operator's capability and level of maturity in relation to the activity, not legal compliance.
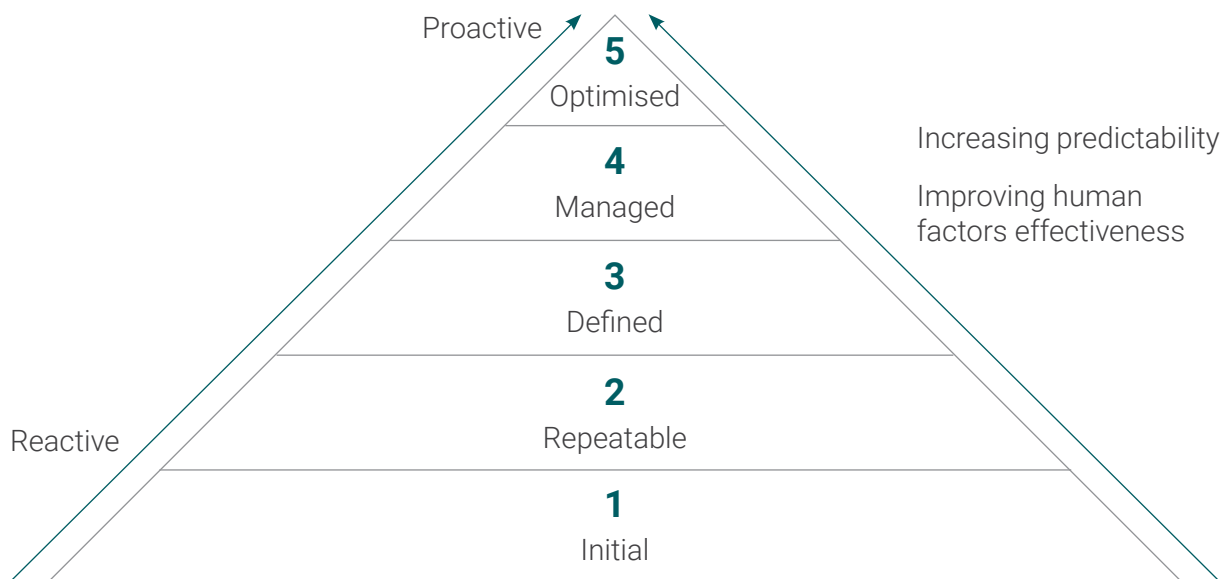

Figure 1 Five levels of capability maturity

A description of each of the ratings and how it may be assessed is provided below.[1]

Rating level	Level title	Level description
5	Optimised	This level typifies 'best practice' within the industry. There is clear organisational commitment to improving the human contribution to safety that goes beyond minimum health and safety expectations. Human factors processes are well integrated into the way the organisation does business. Monitoring of human factors processes forms part of the organisation's normal business practice.
4	Managed	This level typifies 'good practice' within the industry. There is clear organisational commitment to improving the human contribution to safety that goes beyond minimum health and safety expectations. Human factors processes are well integrated into the way the organisation does business, but there may not be sufficient monitoring and feedback across the organisation to ensure the processes are carried out to best effect.
3	Defined	Commitment to human factors is sufficient to meet minimum health and safety expectations. The organisation has its own procedures for ensuring effective implementation of human factors processes. There are few feedback mechanisms for the improvement of human factors processes across the organisation.
2	Repeatable	No established policy or processes, but the organisation has a record of carrying out human factors activity and can repeat what it has done before, at least within projects and incident invesitgations. The organisation does not plan ahead or track what has been done.
1	Initial	Consideration of the human contribution to safety is conducted in an ad hoc, unsystematic way, usually only as a response to specific incidents. In general, these organisations are only beginning to be aware of the need to consider human factors.

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1   *Framework for assessing human factor capability (hse.gov.uk) (2002).*

Next steps

After completing the self-assessment, an action plan should be formulated and endorsed by senior leadership. Information gathered from the self-assessment tool can be used to develop a human factors implementation plan (HFIP). A HFIP can be used for specific projects or improvement areas identified from completing the self-assessment tool, or developed as an overarching plan which outlines how human factors will be integrated throughout the safety management system to increase capability and maturity.

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Key concepts

As low as reasonably practicable (ALARP): when providing evidence that the risks are reduced to a level that is ALARP, a fundamental requirement is to demonstrate that the hazard identification and risk assessments carried out have been systematic and detailed as this provides the foundation on which to base the control measure selection. Risks are required to be periodically reviewed to ensure that they still meet the ALARP criteria, and to ascertain whether further or new controls need to be introduced to take into account changes over time. This may include new knowledge about the risk, the availability of new methods and technologies for reducing or eliminating risks, or when reliability of controls is less than initially thought.

Different operating conditions:

- *normal operation:* most operations functioning correctly with no or minor issues
- *abnormal/irregular operation:* significant issues encountered during operations, including emergency response and upset conditions
- *start-ups and shutdowns*: how the operation is managed during start-ups and shutdowns
- *care and maintenance:* the restricted operations during care and maintenance
- *remote control:* the areas of the facility where operations can be managed through remote control.

Environmental conditions: the work environment can impact on a person's health and performance in a number of different ways, including effects that damage health (e.g. heat stress; hypothermia/hyperthermia; noise-induced hearing loss; inhalation of hazardous dusts, chemicals, mists and fumes; hazardous manual tasks; whole body and hand-arm vibration) and effects that reduce the individual's ability to perform a task (e.g. poor lighting, distraction, noise and vibration).

Good work design principles: the most effective design process begins at the earliest opportunity during the conceptual and planning phases. At this early stage, there is the greatest chance of finding ways to design out hazards, incorporate effective risk control measures and design-in efficiencies. Effective design of good work considers the:

- *work:* how work is performed, including the physical, mental and emotional demands of the tasks and activities, the task duration, frequency, and complexity, and the context and systems of work
- *physical working environment:* the plant, equipment, materials and substances used, and the vehicles, buildings, structures that are workplaces
- *workers:* physical, emotional and mental capacities and needs.

Human factors: human factors is an established science based on social science, psychology and engineering. It includes tools, principles and methodologies that aim to understand the human condition and better design work to improve reliability, safety and performance. Human factors is a systems approach with people at the centre of the system.

Human performance: human performance is the human contribution to system performance and refers to how people perform their work.

Mentally healthy workplace: a mentally healthy workplace is one where workers and management collaborate to protect and promote the health, safety and wellbeing of all. Maintaining a mentally healthy workplace involves continually addressing health, safety and wellbeing concerns in, and due to, the work environment. This includes the:

- organisation and design of work
- workplace culture
- physical environment
- facilities provided.

Performance-shaping factors: performance-shaping factors (PSFs) are conditions that 'shape' human performance and contribute to the likelihood of human error occurring. They can have a positive or negative effect on performance. These factors can be categorised as organisation-related, job-related and individual-related. Performance-shaping factors can be latent or long-term conditions that eventually contribute to an incident, or active or short-term conditions that affect performance on the day of the incident.

Personnel: this include all members of the workforce such as permanent and temporary staff, and contractors.

Psychosocial hazards: these are related to the psychological and social conditions of the workplace, rather than just the physical conditions, and can be harmful to the health of workers and compromise their wellbeing. These include stress, fatigue, bullying, violence, aggression, harassment and burnout. Exposure to psychosocial hazards can impact on a person's ability to perform their work safely.

Safety-critical tasks: those activities where people are expected to perform as barriers against the occurrence of a major incident/fatality or to prevent escalation in the event an incident does occur. They include activities required to support or maintain physical and technological barriers.[2]

So far as reasonably practicable (SFARP): the risk assessment must demonstrate that the operator has reduced the risks associated with identified major incidents to meet the acceptance criteria and to a level that is SFARP. This should include a detailed description of the necessary prevention, detection, control and mitigation measures implemented. Operators should include details of their definition of serious harm and risk acceptance criteria. Summaries of the risk assessment studies should also demonstrate that the various major incidents and cumulative risks meet the acceptance criteria and reduced SFARP. This demonstration should include a technical argument as to why, having achieved the risk acceptance criteria, it is not reasonably practicable to implement further control and mitigation measures.

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2   International Association of Oil & Gas Producers (2011). *Report 454: Human factors engineering in projects. London: OGP Publications.*

Human factors self-assessment tool for safety management systems – template

Operator/licensee	
Facility	
Inspection location	
Assessment date(s)	
Legislation	
Licence	

Part 1 Managing human reliability

Item	Check	Level 1	2	3	4	5	Evidence sighted	Comments
1.1	For different operating conditions (i.e. normal operations, abnormal operating conditions, maintenance, start-up and shutdowns, and emergency situations), has there been an analysis to identify conditions influencing human performance for safety-critical tasks?	☐	☐	☐	☐	☐		
1.2	Does this site identify and record key steps for safety-critical tasks through consultation with operators, walking through the operation and review of documentation (e.g. job task analysis, safe work operating procedures)?	☐	☐	☐	☐	☐		

Item	Check	Level 1	2	3	4	5	Evidence sighted	Comments
1.3	Are controls for safety-critical tasks reviewed on a regular basis to ensure they perform as intended and remain effective?	☐	☐	☐	☐	☐		

Human factors in incident investigation

Item	Check	Level 1	2	3	4	5	Evidence sighted	Comments
1.4	Have the people who are investigating incidents received training and information regarding human factors (HF)?	☐	☐	☐	☐	☐		
1.5	Are multidisciplinary teams (e.g. Health Safety Environment advisors, people who perform the work, people involved in the incident) consulted and involved in incident investigations?	☐	☐	☐	☐	☐		
1.6	Do incident investigations focus on identifying latent conditions (i.e. weaknesses in the system and performance-shaping factors) and active errors?	☐	☐	☐	☐	☐		
1.7	Are performance-shaping factors for high potential incidents (i.e. potential to cause a fatality or major incident) identified?	☐	☐	☐	☐	☐		
1.8	Are incident remediation actions continually applied to the identified human factors until ALARP or SFARP is reached? Are they based on the hierarchy of control?	☐	☐	☐	☐	☐		
1.9	Are leaders and senior managers involved in the review of high potential incidents and ensure any follow-up action is appropriate and closed out in a timely manner?	☐	☐	☐	☐	☐		
1.10	Are key learnings from incident investigations disseminated to the workforce and used to improve safety systems?	☐	☐	☐	☐	☐		

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Part 2 Usable procedures

Item	Check	Level 1	Level 2	Level 3	Level 4	Level 5	Evidence sighted	Comments
2.1	Do current procedures cover the range of areas/operations in adequate detail including:							
	• Plant start-up and shutdown?	☐	☐	☐	☐	☐		
	• Plant operation?	☐	☐	☐	☐	☐		
	• Maintenance operations?	☐	☐	☐	☐	☐		
	• Emergency response?	☐	☐	☐	☐	☐		
2.2	Are procedures reviewed to increase the likelihood of achieving desired performance outcomes and reducing the likelihood of human failure, including:							
	• the language, format and type of procedure caters to all types of users including culturally and linguistically diverse groups, levels of literacy, visual and cognitive differences?	☐	☐	☐	☐	☐		
	• procedures are clear, fit-for-purpose and provide an appropriate level of detail to ensure the tasks are carried out consistently by all users?	☐	☐	☐	☐	☐		
2.3	Is the system for updating procedures accessible, timely and achievable?	☐	☐	☐	☐	☐		
2.4	Do all safety-critical tasks have procedures and associated job aids (e.g. checklists, flow charts) that are clear, fit-for-purpose and cater for the operating condition (i.e. routine, safety-critical, emergency and upset conditions?)	☐	☐	☐	☐	☐		

Item	Check	Level					Evidence sighted	Comments
		1	2	3	4	5		
2.5	Are the procedures and job aids for safety-critical tasks readily accessible to the person performing the tasks?	☐	☐	☐	☐	☐		
2.6	Are reviews of procedures and observation of the associated safety-critical tasks regularly conducted to ensure procedures reflect the current practice and actual tasks that are being performed? This includes both hard copies and electronically held documents.	☐	☐	☐	☐	☐		
2.7	Are the people who perform the safety-critical tasks consulted and involved in writing and reviewing the procedures?	☐	☐	☐	☐	☐		

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Part 3 Training and competence

Item	Check	Level 1	Level 2	Level 3	Level 4	Level 5	Evidence sighted	Comments
3.1	Are training needs analyses conducted for safety-critical tasks which includes different operating conditions? That is: • design, construction, operations, maintenance, projects, and contractor work • routine and non-routine tasks • normal operating conditions • abnormal and emergency conditions • facility changes • emergency response conditions	☐	☐	☐	☐	☐		
3.2	Are training and competency matrices available which clearly identify training and competency requirements to carry out role specific activities?	☐	☐	☐	☐	☐		
3.3	Is training on human factors provided for personnel who hold safety-critical roles?	☐	☐	☐	☐	☐		
3.4	After training and completing any additional learning activities (e.g. high risk work, confined space, crane and forklift operations, process plant operation), is competency independently verified before individuals are allowed to work independently?	☐	☐	☐	☐	☐		
3.5	Is refresher training provided regularly (e.g. every two years and prior to tasks being performed) for the infrequent safety-critical tasks (e.g. plant start-up)? This includes contractors.	☐	☐	☐	☐	☐		

Item	Check	Level					Evidence sighted	Comments
		1	2	3	4	5		
3.6	Is the training and competency system regularly audited to ensure training and competency requirements are current and maintained?	☐	☐	☐	☐	☐		

Part 4 Staffing and workload (including supervision)

Item	Check	Level 1	2	3	4	5	Evidence sighted	Comments
4.1	Are risk assessments or reviews conducted to determine the required staffing levels and mix of skills for effective performance of safety-critical tasks under different operating conditions (i.e. normal operating conditions, abnormal and emergency conditions, facility changes, emergency response conditions)?	☐	☐	☐	☐	☐		
4.2	Are staffing levels regularly monitored against operational changes (i.e. shut down, downsizing, construction, upgrades) to ensure resourcing remains appropriate for the effective performance of safety-critical tasks?	☐	☐	☐	☐	☐		
4.3	Are functional job assessments conducted for each type of job role (e.g. office-based, field-based), which includes identifying physical, cognitive and emotional work demands?	☐	☐	☐	☐	☐		
4.4	Are risk assessments or reviews undertaken to ensure the span of control of supervision is appropriate for the type of tasks being performed, and the experience, skills and knowledge of workers performing the tasks?	☐	☐	☐	☐	☐		
4.5	Do supervisors have the required training and competencies to identify and control hazards, and respond to emergency and recovery situations?	☐	☐	☐	☐	☐		

Item	Check	Level					Evidence sighted	Comments
		1	2	3	4	5		
4.6	Fatigue risk management:							
	• Is there a fatigue risk management procedure in place?	☐	☐	☐	☐	☐		
	• Does the fatigue risk management procedure set out minimum requirements to mitigate the risks of fatigue (i.e. hours of work, irregular or extended work hours, physically or mentally demanding work, repetitive tasks)?	☐	☐	☐	☐	☐		
	• Are compliance audits on the fatigue risk management system conducted and results implemented?	☐	☐	☐	☐	☐		
	• Are assurance checks undertaken during shut down, emergency and irregular conditions to ensure the fatigue risk management plan is being adhered to?	☐	☐	☐	☐	☐		

Part 5 Management of change

Item	Check	Level					Evidence sighted	Comments
		1	2	3	4	5		
5.1	Is there a process for managing change that includes clear objectives, leadership responsibilities for senior management and a structured procedure, including a communication plan?	☐	☐	☐	☐	☐		
5.2	Does consultation occur with personnel impacted by the change?	☐	☐	☐	☐	☐		
5.3	Do risk assessments consider the impact of performance-shaping factors (including the impact of the change process on workers)?	☐	☐	☐	☐	☐		
5.4	Are training and competency requirements reviewed as part of the management of change?	☐	☐	☐	☐	☐		
5.5	Do management of change processes identify key trigger events that may impact the validity of competency profiles (i.e. environmental conditions, staff resourcing, and introduction of new or modified activities, positions, technologies, plant, equipment, systems, or procedures)?	☐	☐	☐	☐	☐		
5.6	Does the management of change process include reviewing and monitoring the change to ensure effective performance of associated safety-critical tasks and other procedures (i.e. maintenance and operational work instructions)?	☐		☐	☐	☐		

Part 6 Safety-critical communications

Item	Check	Level					Evidence sighted	Comments
		1	2	3	4	5		
6.1	Are there defined communication processes for safety-critical tasks (e.g. permit-to-work, shift handover, control room to field operator, maintenance communications, emergency response)?	☐	☐	☐	☐	☐		
6.2	Is major hazard information communicated to workers, contractors, temporary staff and visitors?	☐	☐	☐	☐	☐		
6.3	Is there a process for communicating lessons from safety incidents and changes in practice?	☐	☐	☐	☐	☐		
6.4	Is there a process to ensure safety-critical information has been received and understood by all relevant personnel (e.g. toolbox talks, training, checklists)?	☐	☐	☐	☐	☐		
6.5	Is there a process which outlines how personnel can report safety concerns without fear of retribution?	☐	☐	☐	☐	☐		
6.6	Are opportunities to identify human factors proactively implemented (e.g. learning teams, post job debriefs, discussing performance-shaping factors during pre-starts and toolbox talks)?	☐	☐	☐	☐	☐		

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Part 7 Designing for people

Item	Check	Level 1	2	3	4	5	Evidence sighted	Comments
Human-machine interaction								
7.1	Is machinery assessed against ergonomic principles to determine the suitability for operators and the intended tasks? For example, the ergonomic principles recommended in AS/NZS 4024.1:2019.	☐	☐	☐	☐	☐		
7.2	Are assessments conducted to ensure displays, controls, actuators and signals conform to ergonomic requirements? For example, the requirements outlined in AS/NZS 4024.1:2019.	☐	☐	☐	☐	☐		
Alarm management system								
7.3	Are human factors principles applied to the design of alarm management systems to ensure maximum usability and effectiveness? For example, the human factors principles recommended in AS IEC 62682:2017.	☐	☐	☐	☐	☐		
7.4	Does the alarm management system recognise different operational states, different operator needs (e.g. normal/upset/emergency) and what has and hasn't occurred?	☐	☐	☐	☐	☐		
7.5	Are reviews of the current alarm management system conducted and recommendations from the review, if any, implemented?	☐	☐	☐	☐	☐		
7.6	Are safety-critical alarms clearly distinguished and separately displayed?	☐	☐	☐	☐	☐		
7.7	Is the alarm list and required response process readily available and understandable to the operator?	☐	☐	☐	☐	☐		

Work environment

Item	Check	Level 1	Level 2	Level 3	Level 4	Level 5	Evidence sighted	Comments
7.8	Are risk assessments of environmental conditions (e.g. heat, noise, dust, available workspace, technology) conducted and risks controlled to ALARP or SFARP?	☐	☐	☐	☐	☐		
7.9	Are assessments conducted to ensure lighting is appropriate for the tasks being carried out and directional sources of light are controlled to ALARP or SFARP? For example, close, accurate work will require higher light levels. Lighting recommendations are outlined in AS/NZS 1680: 2009.	☐	☐	☐	☐	☐		
7.10	Are assessments to identify whether noise might interfere with safety-critical communications conducted? This includes: • Emergency sirens are audible from all areas of the site • Radio blackspots are identified and the location communicated to personnel	☐	☐	☐	☐	☐		

Designing jobs for mental health and wellbeing

Item	Check	Level 1	Level 2	Level 3	Level 4	Level 5	Evidence sighted	Comments
7.11	Are good work design principles (i.e. roster design, work demands, support, autonomy) applied to the design of jobs?	☐	☐	☐	☐	☐		
7.12	Are risk assessments of workplace psychosocial hazards conducted and risks controlled to ALARP or SFARP?	☐	☐	☐	☐	☐		

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Part 8 Fitness for work

Item	Check	Level					Evidence sighted	Comments
		1	2	3	4	5		
8.1	Is there a fitness for work (FFW) policy covering fatigue, medical fitness (i.e. physical health and functional capacity), mental health and wellbeing, and alcohol and other drug use?	☐	☐	☐	☐	☐		
8.2	Does the FFW policy or procedure acknowledge that both work-related and personal factors contribute to mental health and wellbeing?	☐	☐	☐	☐	☐		
8.3	Is there an FFW procedure that outlines the process for assessment/evaluation and controls (i.e. removal to a safe work area, evacuation for medical evaluation, and options for an escorted evacuation from site to a safe work area or medical evaluation)?	☐	☐	☐	☐	☐		
8.4	Is there a policy disallowing alcohol consumption in the workplace?	☐	☐	☐	☐	☐		
8.5	Does the workplace culture discourage the excessive consumption of alcohol at work-related social events and in work provided camp and village accommodation?	☐	☐	☐	☐	☐		
8.6	Is there a no tolerance approach to illegal drugs? What strategies are implemented?	☐	☐	☐	☐	☐		
8.7	Is training provided to those with management and supervisory responsibilities outlined in the FFW policy or procedure on the types of factors affecting FFW, assessment methods and process?	☐	☐	☐	☐	☐		

Item	Check	Level					Evidence sighted	Comments
		1	2	3	4	5		
8.8	Is there a policy or procedure which outlines the requirements for welfare checks and checks for unauthorised absence from shift/work?	☐	☐	☐	☐	☐		
8.9	Is training and information provided to personnel on the FFW policy, procedure and conditions that may impact their FFW?	☐	☐	☐	☐	☐		

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Part 9 Health and safety culture

Item	Check	Level					Evidence sighted	Comments
		1	2	3	4	5		
9.1	Do leaders demonstrate their commitment to a positive health and safety culture, including human factors (i.e. allocation of time, money, people, strategic priorities)?	☐	☐	☐	☐	☐		
9.2	Are key performance indicators for safety and health included in position descriptions for leadership, senior management, and those with supervisory responsibilities?	☐	☐	☐	☐	☐		
9.3	Do leaders and senior managers have key performance indicators for engaging with workers who perform safety-critical work activities?	☐	☐	☐	☐	☐		
9.4	Is learning from successful work encouraged and shared with the workforce?	☐	☐	☐	☐	☐		
9.5	Is the reporting of near misses, incidents and accidents without fear of retribution actively promoted by the leadership, senior managers and supervisors?	☐	☐	☐	☐	☐		
9.6	Is a 'just culture' applied after investigations are complete (e.g. workers are not blamed as the cause of incidents)?	☐	☐	☐	☐	☐		
9.7	Are workplace surveys of organisational culture completed regularly (i.e. every two years) and recommendations, if any, implemented? Is feedback provided to personnel?	☐	☐	☐	☐	☐		
9.8	Are reviews of health and safety performance conducted to determine if routine, procedural violations are minimal and not widespread throughout workplace?	☐	☐	☐	☐	☐		

Part 10 Maintenance, inspection and testing

Item	Check	Level					Evidence sighted	Comments
		1	2	3	4	5		
10.1	Are leaders and senior managers provided with training and information on the consequences of failing to provide necessary maintenance, inspection and testing resources (i.e. operational risk assessment results have been communicated)?	☐	☐	☐	☐	☐		
10.2	Are maintenance activities planned and scheduled to ensure tasks can be completed safely and do not affect the safety of other operational areas?	☐	☐	☐	☐	☐		
10.3	Are risk assessments undertaken before high risk, new or unique, maintenance activities commence to identify and control safety-critical tasks to ALARP or SFARP?	☐	☐	☐	☐	☐		
10.4	Are compliance audits conducted on the permit system for maintenance activities (i.e. particularly during emergency or ad hoc critical work)?	☐	☐	☐	☐	☐		
10.5	Is there a process for identifying plant/ equipment that is to be isolated, including the requirement for independent verification to be conducted and documented?	☐	☐	☐	☐	☐		
10.6	Are clear accept/reject criteria with respect to plant condition prior to being put back into service, or allowed to continue in service, provided and readily available?	☐	☐	☐	☐	☐		
10.7	Are safety-critical communications about maintenance activities assured (e.g. shift handover procedure and log, adequate coordination and tracking of maintenance work)?	☐	☐	☐	☐	☐		

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Corrective action plan

Actions	Tasks	Responsible person	Completion date	Review date
Immediate				
Short-term				
Mid-term				
Long-term				

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Additional information and resources

Department of Mines, Industry Regulation and Safety

- Human factors fundamentals for petroleum and major hazard facility operators
- Petroleum safety suite of guidelines for developing safety cases and safety management systems
- Guidelines for major hazard facilities
- Risk management for mentally healthy workplaces
- Mentally healthy workplaces for fly-in, fly-out workers in resources and construction sectors – code of practice
- Mentally healthy workplaces audit tool and technical guide

Other work health and safety regulators

- Safe Work Australia
- Comcare
- National Offshore Petroleum Safety and Environmental Management Authority
- Health & Safety Executive UK

Australian Standards / New Zealand Standards

- AS ISO 31000:2018 *Risk management – Guidelines*
- SA/SNZ HB 205:2017 *Managing-health-and-safety-related risk handbook*
- AS/NZS 4024.1:2019 Series Safety of machinery
- AS/NZS 1680.0:2009 *Interior lighting – safe movement*
- AS IEC 62682:2017 *Management of alarm systems for the process industries*

Other guides

- Engineering Equipment and Materials Users' Association (2013). *Alarm systems: A guide to design, management and procurement*. Publication 191, edition 3.

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