



Australian Government

Australian Radiation Protection and Nuclear Safety Agency

Performance objectives and criteria (PO&C) are used by ARPANSA Inspectors to support a consistent, transparent and rigorous approach to inspection that is consistent with the risk of a facility, source or controlled activity. PO&C provide a comprehensive list of features, controls and behaviours that contribute to safety. When considered with relevant codes and standards the PO&C assist the detailed planning and conduct of each inspection and support a qualitative assessment of safety.

The PO&C have been compiled in consideration of the requirements of the ARPANS Act, international standards and best practices. They describe what ARPANSA expects from licence holders; when met they will achieve high levels of regulatory compliance and safety standards. Where a PO&C is not met ARPANSA will consider the implications for regulatory compliance and safety performance as specified in the Regulatory Delivery Model.

There are eight PO&C baseline inspection areas, known as 'baseline modules' and three cross cutting areas associated with safety culture, human performance and improvement. One or more of these modules is used for the inspection of facilities. A more concise single set of PO&C is used for the inspection of a source recognising that the inspection of sources is usually less complex than a facility.

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BM1 – PERFORMANCE REPORTING VERIFICATION

The organisation has an open reporting culture that supports learning and continuous improvement. Reporting to ARPANSA meets the requirements specified in the current licensing basis (The Act, Regulations and the details relied upon to gain a licence or those subsequently updated and approved).

Information from reference: REG-INS-SUP-280I - December 2015.

OBJECTIVE	CRITERIA
BM 1.1 - reporting to arpansa is open and transparent and meets the licensing requirements. Reported data is accurate and complete.	BM 1.1.1 - The licence holder tells the CEO of arpansa of any identified potential breaches of licence conditions as soon as practicable - reg 45(3)
	BM 1.1.2 - The licence holder reports information on internal reviews and investigations relating to potential problems
	BM 1.1.3 - The licence holder tells the CEO about any accidents within 24 hours if it happening - reg 46(2)(c), and provides a written report about the accident with 14 days of it happening - reg 46(2)(d).
	BM 1.1.4 - The licence holder undertakes an annual review and update of any plans and arrangements for managing the controlled facility, material or apparatus. The licence holder gives the CEO information about the review - reg 50.
	BM 1.1.5 - The licence holder has told the CEO about relevant changes - reg 52(2) unless the licence makes for other arrangements - reg 52(3)
	BM 1.1.6 - Movement of controlled apparatus - the licence holder has told the CEO about the movement of controlled apparatus, controlled materials and controlled facilities - reg 53
	BM 1.1.7 - Reporting requirements stipulated in the licence is met.
	BM 1.1.8 - Reporting requirements stipulated in the current licensing basis are met.
	BM 1.1.9 - The licence holder has reported security incidents to ARPANSA and notified the local police.
	BM 1.1.10 - Any other reporting commitments agreed between the licence holder and arpansa are met.
	BM 1.1.11 - The licence holder is open and transparent in its dealings with arpansa. Safety performance data is collected and provided regularly to ARPANSA.

OBJECTIVE	CRITERIA
BM 1.2 - internal safety and security reporting requirements are established and met. Deficiencies are categorised according to safety and security importance and are fixed in a timely manner	BM 1.2.1 - Near misses are used as learning opportunities and a culture of open reporting is fostered.
	BM 1.2.2 - Independent safety and security group(s) - significant safety and security performance issues (technological, organisational and human) are managed by operationally independent groups with authority to make necessary corrective actions.
BM 1.3 - Responsibility and accountability for reporting is defined, understood and implemented	BM 1.3.1 - Workers know when to report, what to report and who to report to. This is demonstrated in practice.
	BM 1.3.2 - Reports are made in accordance with written requirements. Reports contain correct information, are issued when required and are delivered, the correct destination

BM2 – CONFIGURATION MANAGEMENT

The organisation has, at all times, knowledge of the physical configuration and operational methods of controlled plant or material. Safety margins are met and operations remain within the constraints of safety case. The impact of any changes on safety margins is characterised and understood.

Information from reference: REG-INS-SUP-280J - December 2015.

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>BM 2.1- monitoring and management of safety margins - actual design and operating margins are understood and proactively managed within the bounds of the safety case. Organisational drift is identified and managed.</p>	<p>BM 2.1.1 - Configuration control - procedures are used to maintain the configuration of controlled plant and material. These controls extend to operational and security aspects.</p>	
	<p>BM 2.1.2 - Configuration and use of controlled plant and material is consistent with procedures, drawings and other operational documents. The configuration is confirmed by routine activities which are used to detect degraded performance.</p>	
	<p>BM 2.1.3 - Operating limits - any action or condition that may result in operations beyond those normally permitted is assessed and resolved. Special attention is given to those conditions which challenge the safety limits specified in the safety case.</p>	
	<p>BM 2.1.4 - Actual plant conditions and operating practices are understood and evaluated against design and operating safety margins. Actions commensurate with the risk are taken when operating margins are degraded.</p>	
	<p>BM 2.1.5 - The impact of reduced margins is communicated and understood by managers.</p>	
	<p>BM 2.1.6 - Communication to affected persons is provided of technical information relating to configuration changes (temporary and permanent). Operational workers understand the implications for safety of any configuration changes</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
	BM 2.1.7 - Safety system tests are undertaken in accordance with OLCs or design authority/manufacturers recommendations. Analysis of results is undertaken and intervention is taken on signs of declining performance	
	BM 2.1.8 - Maintenance and operational oversight programs are used to confirm that safety margins are not degraded, including by the drift of operating processes.	
	BM 2.1.9 - Activities that affect the status of controlled plant or material, (e.g. Maintenance and testing) is controlled to maintain acceptable safety margins at all times.	
	BM 2.1.10 - The implications of degraded performance of systems (technological and human) is assessed for the system directly affected and for its impact on interfacing equipment, systems and emergency response.	
	BM 2.1.11 - Any implications for other operational areas from degraded performance is considered and communicated to corresponding managers. Managers have knowledge of such information.	
BM 2.2 - management of change - any changes to the licensed activity are undertaken in consideration of the safety case. The impact on nuclear safety and radiation protection safety margins is understood at all times.	BM 2.2.1- change management procedures are always used when making changes to plant, equipment, operating processes and management arrangements	<p>Impact on radiation protection and nuclear safety is addressed. The assessment addresses the impact on probabilistic and deterministic safety assessments where applicable.</p> <p>The effects of change on design and operating margins are identified and understood and taken into account during the change management process</p> <p>The impact on safety (including epr) and security during implementation is considered. This assessment includes consideration of temporary structures and equipment and the presence of additional workers.</p> <p>Failure modes and effects are identified and mitigated where necessary.</p>

OBJECTIVE	CRITERIA	SUB-CRITERIA
		<p>Prioritisation of changes - due consideration is given to safety in the prioritisation of changes. Changes which improve safety are implemented in a timely manner.</p> <p>Improperly conceived or executed - risks associated with potential design or installation errors are taken into account</p>
	BM 2.2.2 - change categorisation - all changes are appropriately categorised under regs 51 or 52. .	
	BM 2.2.3 - authorisation of changes - all changes are authorised by a leader with suitable design and operating knowledge of the controlled activity, plant and equipment (e.g. The design authority).	
	BM 2.2.4 - regulatory approval of changes - changes with significant implications for safety are not implemented without the approval of the CEO of arpana	
	BM 2.2.5 - selection of change - changes are selected from a range of viable options. The selection rationale is documented and demonstrates that safety is appropriately weighted in the selection.	<p>Consistency and standardisation - processes are used to promote consistency of physical plant, equipment and operating processes</p> <p>Component replacement - appropriate processes are implemented to assess that replacement parts do not affect the safety functions of systems or unknowingly reduce safety margins.</p>
	BM 2.2.6 - development and implementation of change - design requirements, specifications and implementation plans are established for changes. The safety impact of alterations to the change is assessed.	<p>Acceptance criteria - acceptance criteria are established prior to the implementation of changes</p> <p>Safety impact of change alterations - the safety impact of any alterations required during the development or implementation of a change are properly assessed and managed. Design reviews are undertaken.</p> <p>Training of personnel - personnel are trained on changes prior to operating or using the changed equipment, procedure or instruction</p>

OBJECTIVE	CRITERIA	SUB-CRITERIA
	<p data-bbox="499 288 1417 384">BM 2.2.7 - internal safety review - all changes are subject to an internal safety oversight. The of internal review level is determined by the safety categorisation of the change.</p> <p data-bbox="499 663 1417 759">BM 2.2.8 - post implementation review - reviews are undertaken to establish the effectiveness of a change and of the change management process</p>	<p data-bbox="1440 169 2139 264">Commissioning - changes are tested to ensure safety functions are met. Testing addresses all functional modes and all system interfaces. Risks</p> <p data-bbox="1440 285 2107 344">Regulatory review - changes categorised under regulation 51 are authorised by arpana prior to implementation.</p> <p data-bbox="1440 365 2139 493">Availability of design data - calculations, drawings, specifications analyses and other design information pertaining to the change is readily available and is identified by comprehensive referencing.</p> <p data-bbox="1440 513 2114 641">Independence and multi-discipline team review - the internal safety review should be independent and undertaken by a multi-disciplinary team. The team is empowered to make decisions and isolated from other organisational pressures</p> <p data-bbox="1440 662 2107 758">Update of documentation - documentation is updated to reflect the changed status of the controlled activity, plant or equipment. The update is undertaken in a timely manner.</p> <p data-bbox="1440 778 2101 837">Performance verification - the performance of the change is reviewed to verify that safety functions are met</p> <p data-bbox="1440 858 2107 917">Lessons learnt from operational feedback and risk analysis is used to improve configuration control processes</p>
<p data-bbox="91 943 481 1200">BM 2.3 - Management of Temporary Change - The planning and management of temporary changes to a controlled activity, plant or equipment is undertaken in a similar process to permanent changes.</p>	<p data-bbox="499 943 1417 1007">BM 2.3.1- change categorisation - all temporary changes are appropriately categorised under regs 51 or 52</p> <p data-bbox="499 1038 1417 1166">BM 2.3.2 - long term effectiveness - where short term fixes are introduced pending a permanent change, their long term effectiveness (useful life) is taken into account in in the planning and prioritising of the permanent solution.</p> <p data-bbox="499 1198 1417 1294">BM 2.3.3 - periodic review of temporary changes is undertaken to ensure that they are still effective. Where applicable this review takes consideration of the ongoing development of permanent alternatives.</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
BM 2.4 - Nuclear and Radioactive Material Management practices ensure the safety and security of nuclear and radioactive material	BM 2.4.1- criticality safety for nuclear material is adhered through the implementation of approved procedures. Criticality certificates are issued and displayed for all areas where nuclear material is handled.	
	BM 2.4.2- material management controls protect the integrity of nuclear and radioactive materials from contamination and unplanned deterioration.	
	BM 2.4.3 - roles and responsibilities for groups involved in ra material management are defined and followed.	
	BM 2.4.4 - security - physical protection is effective in the safeguarding of nuclear and radioactive material. The precise configuration and location of material is known and verified.	Material is protected from malicious threats Material is protected from inadvertent mis-use
BM 2.5 - Nuclear Fuel Management (Reactors Only) - Reactor Fuel is procured, operated, stored and transported in a manner that protects its integrity and security.	BM 2.5.1 - the operational margin of the fuel is known maintained. Operating and engineering personnel and management understand core characteristics and operating margins.	
	BM 2.5.2 - failure free fuel operations - management focus on sustaining fuel operations without failures.	
	BM 2.5.3 - foreign material - controls are in place and effective to prevent foreign material causing damage to fuel.	
	BM 2.5.4 - oversight of fuel fabrication - operator oversight of fuel fabrication and pre-use inspection procedures ensure that fuel is reliable and free of defects.	
	BM 2.5.5 - evaluation of fuel performance - a programme of monitoring and inspection is used evaluate the affects of facility modification on the fuel. Fuel unloaded from the core is inspected to verify its integrity during use and to ensure that its integrity will be retained during storage.	
	BM 2.5.6 - roles and responsibilities for groups involved in fuel management and reload strategies are defined and followed.	

BM 3 – INSPECTION, TESTING AND MAINTENANCE (ITM)

Inspection, Testing, and Maintenance (ITM) is undertaken in a manner which ensures the safe operation of the facility. Workers undertaking itm are suitable qualified and experienced and demonstrate competence at all times

Information from reference: REG-INS-SUP-280K - December 2015.

OBJECTIVE	CRITERIA
BM 3.1 - Management systems ensure that safety functions are maintained through a comprehensive programme of itm. Managers establish effective accountabilities and strive for high performance of all workers.	BM 3.1.1 - Accountabilities for ITM are identified and reinforced by management
	BM 3.1.2 - There are accurate procedures, instructions, specifications, drawings, etc. For itm. Safety requirements are informed by the safety case and are clearly stated.
	BM 3.1.3 - Systems are implemented that ensure effective communications (including handover) on plant and equipment status within and between operations and maintenance groups.
	BM 3.1.4 - Arrangements are in place to ensure that work undertaken by contractors is properly supervised and meets required standards. The licence holder maintains effective 'ownership' of contractor maintained equipment and fully aware of the scope of work undertaken.
	BM 3.1.5 - There is compliance with all itm requirements relating to olcs.
	BM 3.1.6 - ITM provides effective and ongoing equipment qualification
	BM 3.1.7 - Management systems ensure that itm work is properly authorised beforehand and documented during and after.
	BM 3.1.8 - ITM systems ensure that the causes of unexpected failures and performance issues are investigated.
	BM 3.1.9 - ITM frequencies are reviewed when equipment is found repeatedly out of specification. The safety consequences to safety systems found out of specification are assessed.
	BM 3.1.10 - Systems ensure that wide implications are considered when a single system is found repeatedly to be outside of specification.
	BM 3.1.11 - Priority is given to maintenance of safety functions over operational availability and production.

OBJECTIVE	CRITERIA
BM 3.2 – ITM is conducted to high standards in accordance with written and approved procedures and instructions. Workers have good situational awareness for unexpected conditions, details of which are accurately recorded and assessed for the purpose of process improvements	BM 3.1.12 - Any impact on facility safety, security and epr of temporary equipment is properly assessed. Examples include scaffold, heavy equipment, combustible and energetic materials, electrical and communications equipment.
	BM 3.1.13 - Systems are in place to ensure itm equipment is properly maintained and calibrated.
	BM 3.2.1 - ITM is conducted to a high standard of accuracy in accordance with approved procedures and instructions. Maintained equipment meets it design and safety functions
	BM 3.2.2 - Workers make good use of procedures, instructions, specification, drawings, etc.
	BM 3.2.3 - Maintained equipment meets its specifications. Special attention is given to verifying that safety functions are met.
	BM 3.2.4 - There is effective planning for itm. Work is undertaken with the correct equipment tools and material (including specifications and drawings where appropriate)
	BM 3.2.5 -The correct replacement parts are used. Where an identical replacement is not available, the alternative replacement is subject to an effective equivalency evaluation. Note: an identical item has the same technical and physical characteristics, i.e. it is physically identical.
	BM 3.2.6 - Maintenance workers have good situational awareness and are able to anticipate and prevent unplanned system trips and faults associated with the work at hand.
	BM 3.2.7 - There is good reporting of any unexpected or abnormal conditions found during itm. Where necessary, when faced with uncertainty or unexpected conditions, the work is safely halted to allow for advice to be sought on the best way forward.
	BM 3.2.8 - ITM is conducted at the required frequency
BM 3.2.9 - Tools and equipment are properly maintained and calibrated.	
BM 3.2.10 - ITM frequencies are reviewed when equipment is found repeatedly out of specification. The safety consequences to systems that are found out of specification is assessed.	

OBJECTIVE	CRITERIA
<p>BM 3.3 - Knowledge of workers - workers have good knowledge of the processes and methods used in itm. Workers have detailed knowledge relating to facility and worker safety and adequately understand the impact that the itm tasks being undertaken may have.</p>	<p>BM 3.3.1 - ITM workers have adequate understanding of the design and safety functions of the systems and components that they work on.</p>
	<p>BM 3.3.2 - ITM workers understand the correct use of tools and equipment needed to conduct their tasks safely.</p>
	<p>BM 3.3.3 - ITM workers make good selection of tools and equipment in conducting their work. The section is based on knowledge of the abilities and limitation of the equipment.</p>
	<p>BM 3.3.4 - The requirements of configuration controls during maintenance are fully understood.</p>
	<p>BM 3.3.5 - Workers have good knowledge of current and emerging issues pertaining to ITM</p>
<p>BM 3.4 - learning - the experience and results of itm are used to continually evaluate program performance. Itm workers are central to optimise facility design and operation.</p>	<p>BM 3.4.1 - Data from itm tasks is used to further the understanding of system reliability and ageing.</p>
	<p>BM 3.4.2 - Performance data and observations are used to optimise itm programmes. Maintenance personnel are engaged in this process.</p>
	<p>BM 3.4.3 - ITM workers are engaged in the planning, review and improvement of structures, systems and components and related processes</p>
	<p>BM 3.4.4 - ITM workers are provided training to maintain and develop their skills and knowledge.</p>

BM4 – TRAINING

A systematic approach to training is used; i.e. training programmes are the result of analysis of training needs, design and development, effective implementation and evaluation of outcomes. Training ensures that all workers are suitably qualified and experienced so that the controlled activity is undertaken safely and securely. Leadership is actively engaged in ensuring that training supports high standards of human performance.

Information from reference: REG-INS-SUP-280L - December 2015.

OBJECTIVE	CRITERIA
BM 4.1 - Training requirements are identified and defined for all roles important for safety and security	BM 4.1.1 - training is regarded as a strategic issue. The process and delivery of training supports stated organisational strategies for the safety of undertakings relating to nuclear safety and radiation protection.
	BM 4.1.2 - Training standards are established.
	BM 4.1.3 - Training needs are systematically identified and analysed to support the timely delivery of outcome based training that concentrates on the job tasks and competencies required to perform a particular job.
	BM 4.1.4 - Training supports the integration of risk identification, risk assessment and contingency planning into everyday activities.
	BM 4.1.5 - Formal requirements for training and qualification are established for any workers whose roles are important to safety.
	BM 4.1.6 - Managers seek to improve performance.
	BM 4.1.7 - The use workplace performance indicators is used to identify training requirements.
BM 4.2 - Programs are developed to fully meet training needs.	BM 4.2.1 - Accountabilities are established that ensure training is developed and delivered in a systematic manner. Workers (including leaders and managers) understand their responsibilities for training.
	BM 4.2.2 - Training objectives are established based on training needs analysis. The objectives are organised into a training plan
	BM 4.2.3 - Training material, including assessment criteria are developed in accordance of the training plan
	BM 4.2.4 - Training programmes cover direct technical skills and human and organisational factors, e.g. Safety culture, human performance and performance improvement.

OBJECTIVE	CRITERIA
BM 4.3 - Training is implemented according to a developed plan and is delivered by persons with competence in training	BM 4.2.5 - Training material properly reflects the entry level knowledge and competencies of trainees.
	BM 4.2.6 - Pass/fail criteria are clearly defined for written, oral and practical examinations before the examination. Examination standards are consistent.
	BM 4.2.7 - There is formal selection and training processes for trainers. This requirement covers classroom and on-the-job trainers.
	BM 4.2.8 - Training programmes are developed by experienced trainers that ensure a good depth of knowledge is passed onto trainees. This requirement covers classroom and on-the-job trainers.
	BM 4.2.9 - Worker accreditations and authorisations are provided by line managers
	BM 4.2.10 - Managers approve training programmes
	BM 4.3.1 - Established training standards and objectives are met.
	BM 4.3.2 - Trainers demonstrate good knowledge and experience and perform their duties to a high standard. Good depth of knowledge is passed onto trainees.
	BM 4.3.3 - On-the-job training is supported by good facilities and quality time for learning purposes.
	BM 4.3.4 - Training materials are up to date and regularly reviewed. Training is conducted using training materials developed.
BM 4.3.5 - Training material, including any simulators, properly represents the current configuration of plant, equipment and processes. Changes to plant, equipment and processes are quickly reflected in training.	
BM 4.3.6 - Trained workers adequately understand the job requirements that must be met. Workers demonstrate the behaviours of an engaged, thinking worker.	
BM 4.3.7 - Training reinforces expected behaviours.	
BM 4.3.8 - Training provides for adequate succession planning to avoid unexpected safety and security vulnerabilities	
BM 4.3.9 - Managers reinforce expectations by their involvement in the delivery of training.	

OBJECTIVE	CRITERIA
<p>BM 4.4 - The effectiveness of training is regularly reviewed.</p>	<p>BM 4.4.1 - Methods used to evaluate the effectiveness of training are established before training is implemented. All aspects of training programmes are evaluated.</p>
	<p>BM 4.4.2 - Managers use workplace performance indicators to measure the effectiveness of training programmes</p>
	<p>BM 4.4.3 - Managers monitor and influence performance improvement by observing work activities and training. Managers identify good and bad deviations from designed performance are evaluated and training is adjusted accordingly.</p>
	<p>BM 4.4.4 - There are comprehensive training records available. Records cover training content, attendees and assessment results.</p>
	<p>BM 4.4.5 - Immediate and delayed trainee feedback on how to improve training is captured and used.</p>

BM5 – EVENT PROTECTION

The licensee has considered and implemented controls regarding the effects of outside influences on the controlled apparatus or sources. (Examples of events to be considered include: fire, flood, cyclones, tidal waves, earthquake, lightning strike, other weather events or natural disasters; partial or total building collapse; tree, crane or other structural impact; terrorist, riot, civil unrest or other human aggression; utility failures such as loss or excess of water, gas, electricity; attack by rodents or other pests.)

Note: There is some cross over from this module to Configuration Control and Emergency Preparedness and Response.

Reference: REG-INS-SUP-280M - December 2015

OBJECTIVE	CRITERIA
BM 5.1 - Fire protection - fire fighting systems and equipment are operational. Fire loads are reduced to safe levels.	<p>BM 5.1.1 - Combustible materials are appropriately minimised and kept away from safety significant SSC wherever possible.</p> <p>BM 5.1.2 - Non-combustible materials are used wherever possible and reasonable.</p> <p>BM 5.1.3 - Fire systems and fire fighting equipment is maintained and functional</p>
BM 5.2 - Infrastructure is in good order - the general condition of infrastructure, combined with an external event (such as a storm) does not present a hazard to nuclear or radiological safety	
BM 5.3 - Procedures and instructions are in place to reduce vulnerability of the facility to external threats.	<p>BM 5.3.1 - Procedures are in place for land management around the facility. The land is regularly inspected for fuel loading, drainage, pest infestation, etc.</p> <p>BM 5.3.2 - Administrative controls are in place to minimise the presence of combustible materials and other fire hazards. Fire fighting equipment is present, maintained and operational</p> <p>BM 5.3.3 - The impact on the safety case of any temporary works, including adjacent construction, are properly assessed and managed. Examples may include the impact of construction vehicles and cranes, undermining of foundations, adjacent fire or explosion, introduced security threats, etc.</p> <p>BM 5.3.4 - The impact on the safety case of proposed or new structures, or changes in land usage around the facility are assessed. Examples may include the introduction of additional fire or explosive hazards, increase water run off, changed airflow, increased population, etc.</p>

OBJECTIVE	CRITERIA
<p>BM 5.4 - Security systems are maintained and operational. Systems are set to meet or exceed the current threat level.</p>	<p>BM 5.4.1 - Security infrastructure in in good condition, e.g. walls, fences, signs, lighting, surveillance systems and the protective security measures</p> <p>BM 5.4.2 - There is no indication of unauthorised access to controlled materials or equipment</p>
<p>BM 5.5 - Seismic precautions are properly fitted and maintained where required. Facility modifications and additions meet established requirements.</p>	
<p>BM 5.6 - Systems are in place to maintain safety functions in the event of a services failure to the facility (electricity, gas, water, etc.). These systems can be isolated when needed, for example protection from a gas leak.</p>	
<p>BM 5.7 - Good land management practices are implemented to make the facility resilient to external safety hazards and security threats.</p>	<p>BM 5.7.1 - There is no significant build-up of natural fuel loads that may threaten the facility.</p> <p>BM 5.7.2 - Drainage of land around the facility is clear of obstructions and functional.</p> <p>BM 5.7.3 - Where appropriate the facility is protected from external flooding by well maintained walls, levies, bunds, etc.</p> <p>BM 5.7.4 - Land management supports local security arrangements - security signs and warnings are easy to see, unauthorised access is not obscured from view by trees or other vegetation.</p> <p>BM 5.7.5 - There is no evidence of damage from pest infestation. Examples include rodents, rabbits and termites.</p>
<p>BM 5.8 - Systems are in place for effective barriers and precautions to prevent, as far as is practicable, the effects of external events and threats.</p>	

BM6 – SECURITY

Effective security measures prevent unauthorised access or damage to, the loss, theft or unauthorised transfer or the unauthorised use of a radiation source or facility.

Reference: REG-INS-SUP-280N - December 2015.

OBJECTIVE	CRITERIA	SUB-CRITERIA
BM 6.1 - Physical security arrangements are in accordance with ARPANSA RPS-11, Code of Practice on the Security of Radioactive Sources (2007)	BM 6.1.1 - Category 1 security enhanced sources are protected by, at a minimum, physical security measures capable of allowing immediate detection and assessment of intrusion, and provide sufficient delay for a guard or police service to interrupt unauthorised removal of the source.	
	BM 6.1.2 - Category 2 security enhanced sources are protected by, at a minimum, physical security measures capable of allowing immediate detection and assessment of any unauthorised access to the source location.	
	BM 6.1.3 - Category 3 security enhanced sources are protected by, at a minimum, physical security measures capable of preventing unauthorised access to the source by human force.	
	BM 6.1.4 - Category 4 and 5 sources are protected effectively by security measures provided for safety purposes. Section 7 of RPS 11 applies.	
BM 6.2 - Management of change - Any changes to the licensed activity are undertaken in consideration of the safety case. The impact on nuclear safety and radiation protection safety	BM 6.2.1 - Scaleable security arrangements are adapted effectively, and in a timely manner, in accordance with the threat level and the security plan.	
	BM 6.2.2 - Drills and exercises are used to test the responses to potential or actual security incidents. Where practicable, the security response is also tested during safety incidents, drills and exercises.	

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>margins is understood at all times.</p>	<p>BM 6.2.3 - Security responses are demonstrated to be effective.</p>	
	<p>BM 6.2.4 - Security incidents are reported appropriately. Reporting to outside organisations (e.g. the police, ASNO and ARPANSA) meets or exceeds regulatory requirements.</p>	
	<p>BM 6.2.5 - Security responses to not impede upon the performance of safety systems or the safety of people.</p>	
<p>BM 6.3 - The organisation has effective security management arrangements that are supported by a good security culture. An integrated approach is taken to Safety and security.</p>	<p>BM 6.3.1 - Security Culture - The organisation, at all levels, possess shared characteristics, attitudes and behaviours which serve as a means to support and enhance security.</p>	
	<p>BM 6.3.2 - Accountabilities are established and responsibilities allocated to suitably qualified and experienced people that have authority to carry out their responsibilities.</p>	
	<p>BM 6.3.3 - The protective security system comprehensively addresses security concerns and threats</p>	
	<p>BM 6.3.4 - Safety and security measures are developed so that they do not compromise each other. Safety and security are seen as complimentary and processes are designed so that measures for one compliments the other.</p>	
	<p>BM 6.3.5 - Security and safety personnel work co-operatively to achieve good outcomes.</p>	
	<p>BM 6.3.6 - Security Plans are based on a developed strategy that is consistent with the Commonwealth Protective Security Policy Framework. Security response infrastructure and resources are provided, maintained and updated to implement the strategy through the Security Plan.</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
	<p>BM 6.3.7 - Up to date, detailed information and a description of any radioactive or nuclear material is included in the Security Plan.</p> <p>BM 6.3.7 - Security arrangements cover physical plant and materials, people and information (including cybersecurity).</p> <p>BM 6.3.8 - The security plan accurately describes how the security system achieves the required security outcomes. Deviations between the security plan and actual practice are fixed in a timely manner.</p> <p>BM 6.3.9 - There are effective quality system arrangements in place. Arrangements are auditable (say what you do, do what you said, show what you did).</p>	<p>Details of the material includes: radionuclide(s); activity and date of measurement; serial numbers (including housing); physical and chemical form; and, details of the source container. Information is readily verifiable.</p> <p>An accurate description of the location of the material is included in the security plan.</p>
<p>BM 6.4 - Monitoring - There is effective monitoring and management of external and internal threats.</p>	<p>BM 6.4.1 - The trustworthiness of individuals in the workplace is assessed, maintained and managed accordingly.</p> <p>BM 6.4.2 - Measures to detect and assess malicious acts (unauthorised removal and sabotage) are implemented effectively.</p>	
<p>BM 6.5 - Anticipation - Threat environments are actively monitored and managed. Security systems are used to manage identified threats.</p>	<p>BM 6.5.1 - Vulnerability assessments are performed and regularly reviewed to identify weaknesses in the protective security system</p> <p>BM 6.5.2 - Access authorisations and controls are implemented to protect vital and risk significant plant, equipment and processes.</p> <p>BM 6.5.3 - Changes to Security Plans do not reduce the effectiveness of the plan</p> <p>BM 6.5.4 - Threats from any non-routine activities makes consideration of introduced or revised threats.</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
BM 6.6 - Learning - Learning is achieved from the evaluation of internal and external incidents and operations.	BM 6.6.1 - Security events are reported effectively - Lessons from security events are identified and learning is evident in ongoing practices	
	BM 6.6.2 - Evaluations, drills and exercises take place periodically that test and assess the security system effectiveness. Corrective actions are implemented quickly.	
	BM 6.6.3 - External incidents both national and international are used to improve internal security. Distancing through differencing is avoided.	

BM7 – RADIOLOGICAL PROTECTION

The exposure to radiation and its effects is controlled thereby protecting people and the environment from the harmful effects of exposure to radiation and radioactive material.

Reference: REG-INS-SUP-2800 - December 2015

OBJECTIVE	CRITERIA	SUB-CRITERIA
BM 7.1 - Management of Radiation Protection - An integrated management system is used for all aspects of radiation protection. The management system provides a toolbox of organisational needs to meet RP functions.	BM 7.1.1 - There are detailed and accurate records for doses to workers and RP activities. Quality control is used to verify that records are correct.	
	BM 7.1.2 - Operational procedures, instructions, work permits, method statements, ALARA plans, etc, are used effectively to communicate RP requirements to all workers.	
	BM 7.1.3 - Requirements for protective practices, including the use of temporary shielding and PPE are clearly stated in procedures and instructions, etc.	
	BM 7.1.4 - Systems communicate the radiological status and condition of work areas to other workers and visitors before they enter a work place. Updates are provided as necessary and promptly.	
	BM 7.1.5 - Requirements for the clearance of equipment and materials from radiological controlled areas are defined and followed.	
	BM 7.1.6 - Radiation areas are properly classified and visibly identified. Access controls are used to prevent unauthorised access.	
	BM 7.1.7 - Workers who may have been exposed to laser equipment undergo regular eye examination.	
BM 7.2 - Work Places and Practices - Work places are kept in a safe condition where radiation and	BM 7.2.1 - Dosimetry is appropriate for the work undertaken.	

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>contamination levels are as low as practicable. The consequences of any unexpected radiological events are minimised.</p>	<p>BM 7.2.2 - Multiple controls and defences are used to avoid unplanned radiological events. Any radiation or contamination events are reported and used for trending and learning.</p>	
	<p>BM 7.2.3 - Shielding is used to minimise radiation exposure to people. Shielding is effective.</p>	
	<p>BM 7.2.4 - Requirements of protective practices for radiation protection, including the use of temporary shielding and PPE stated in procedures and instructions, etc. are followed.</p>	
	<p>BM 7.2.5 - The risks associated with lone working are identified and managed. Lone working is avoided where possible.</p>	
	<p>BM 7.2.6 - There is good compliance with approved procedures and instructions.</p>	
	<p>BM 7.2.7 - As far as practicable, radiation areas are kept clean and free of contamination.</p>	
	<p>BM 7.2.8 - Where there is a potential for contamination, monitors are used at all entry and exit points of a controlled area to verify the absence of contamination.</p>	
	<p>BM 7.2.9 - Surveys for radiation and contamination hazards in the workplace are regularly undertaken. Contamination surveys are undertaken outside of controlled areas to verify that contamination has not spread beyond the area boundary.</p>	
	<p>BM 7.2.10 - Workers in contamination control workplace abide by good hygiene practices and barrier controls.</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
	<p>BM 7.2.11 - Controls are used in areas where there is the potential for contamination of components and equipment and other items. Clearance procedures are used when removing items from these areas.</p>	
	<p>BM 7.2.12 - Workers identify radiation hot spots, and contamination and take appropriate mitigating actions.</p>	
	<p>BM 7.2.13 - Workers identify changing and unexpected radiological conditions and apply suitable mitigation. Decision making is conservative.</p>	
	<p>BM 7.2.14 - Contamination is controlled at its source.</p>	
<p>BM 7.3 - Workers accountable for radiation protection are suitably qualified and experienced and perform their duties for radiological protection to a high standard.</p>	<p>BM 7.3.1 - Workers have a good understanding of radiological principles.</p>	
	<p>BM 7.3.2 - Workers have good understanding of RP equipment (capabilities and limitations).</p>	
	<p>BM 7.3.3 - Workers have a good understanding of the radiological features of the source or facility under normal and abnormal operations.</p>	
	<p>BM 7.3.4 - Workers use appropriate instruments and methods. Work is undertaken in accordance with approved plans and procedures.</p>	
	<p>BM 7.3.5 - Workers demonstrate an ability to identify, document and correct radiological issues encountered in the workplace.</p>	
<p>BM 7.4 - Leadership of radiological protection are role models of good practice and are engaged with and integrated effectively into the operational environment.</p>	<p>BM 7.4.1 - RPAs and RPSs monitor and identify radiation hazards in the workplace.</p>	
	<p>BM 7.4.2 - RPAs are involved in decision making regarding the design of the workplace and processes.</p>	
	<p>BM 7.4.3 - RP workers model correct behaviours at all times. These workers also ensure that other workers comply with RP requirements.</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
BM 7.5 - Radiation dose limits - Doses to workers and the public are below the statutory dose limits.	BM 7.4.4 - Managers use performance improvement programs to reduce individual and collective doses to ALARA.	
	BM 7.4.5 - RP Specialists are used as an integral part of an operational team rather than simply a service provider.	
	BM 7.5.1 - Effective doses to people are within the statutory dose limits of Reg 59 and Reg 60	<p>Doses to radiation workers do not exceed 20 mSv/yr averaged over 5 years, or 50 mSv in a single year.</p> <p>1 mSv per year to members of the public.</p> <p>1 mSv per year for occupationally exposed, non-radiation workers.</p> <p>1 mSv to an unborn child.</p>
	BM 7.5.2 - Annual equivalent doses are within the statutory dose limits of Reg 62	<p>Doses to skin of 500 mSv for occupational exposure or 50 mSv to a member of the public.</p> <p>Doses to the hands and feet of 500 mSv for occupational exposure.</p> <p>Occupational exposure to the lens of the eye of 20 mSv averaged over five years or 50 mSv in a single year, and 15 mSv for members of the public in any year.</p>
BM 7.6 - An approach of justification, limitation and optimisation is applied to radiation protection.	BM 7.6.1 - Optimisation is applied where the annual radiation dose arising from a facility or activity is at or above 2 mSv for an occupationally exposed person or 20 microSv for a member of the public (RAP 60).	
	BM 7.6.2 - Dose optimisation measures are applied in preference: firstly engineered systems, then supporting systems and work practices; and lastly PPE.	
	BM 7.6.3 - Dose constraints are established that bound the optimisation of each source (RAPS Para 5.14).	

OBJECTIVE	CRITERIA	SUB-CRITERIA
BM 7.7 - Radiation protection equipment used for normal operation and emergencies is appropriate, maintained and calibrated.	BM 7.6.4 - Doses are shown to be ALARA for any activity where the resultant dose is assessed to be at or above the dose constraint. Dose assessments are verified and all assumptions are supported (RAPS Para 5.15).	
	BM 7.6.5 - Assessment of doses to the public and environment consider all exposure pathways and identify critical groups (RAPS Para 5.17).	
	BM 7.6.6 - Dose constraints are reviewed and adjusted to drive improvements in radiation protection.	
	BM 7.7.1 - Portable and fixed radiation Instruments are well maintained.	
	BM 7.7.2 - Calibrations are up to date.	
	BM 7.7.3 - Systems important to radiation safety are properly maintained (e.g. shielding, ventilation systems, hot cells, glove boxes and fume cupboards, filters, breathing air supplies, access controls, signs and notices).	

BM8 – EMERGENCY PREPAREDNESS AND RESPONSE

The licence holder anticipates hazards and threats, assesses their consequences and prepares appropriate systems and measures to ensure an effective, timely, integrated, controlled and coordinated response to any nuclear or radiological emergency.

Reference: REG-INS-SUP-280P - December 2015.

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>BM 8.1 - Emergency Preparedness – Workers, facilities and equipment are ready to respond to emergencies, incidents and other disruptive events. Arrangements include offsite response for beyond design basis accidents and threats.</p>	<p>BM 8.1.1 - Emergency management structures are established and implemented which meet practice goals.</p>	<p>Accountabilities and performance requirements are established.</p> <p>Endurance of arrangements - Management structures ensure that arrangements and resources will endure for the duration of any foreseeable accident.</p> <p>Equipment and facilities are properly supplied and maintained.</p> <p>Workers are properly informed of the status of arrangements and equipment. Operational managers and workers are appropriately consulted beforehand on any changes to these arrangements and equipment.</p> <p>Where off-site responders play an active role, co-operative, supportive relationships are rostered between the organisations and workers.</p>
	<p>BM 8.1.2 - Emergency plans, procedures and instructions are prepared and readily available for all foreseeable emergencies identified in the safety case. Emergency response can be graded according to the severity of the emergency.</p>	<p>Emergency plans, procedures and instructions establish appropriate authorisations and accountabilities for the duration of an emergency.</p>
		<p>Emergency plans provide clear guidance to authorise suspension and resumption of normal working processes and arrangements.</p> <p>Emergency plans, procedures and instructions appropriately prioritise the three basic nuclear safety functions of reactivity control, fuel cooling and confinement/containment.</p> <p>Emergency Plans and Arrangements are underlined by appropriate radiation protection principles such as protection of workers and the public and consideration for exposure pathways.</p>

OBJECTIVE**CRITERIA****SUB-CRITERIA**

BM 8.1.3 - Drills, training and exercises are regularly performed. All workers that may play a part in managing an emergency (including executive managers and offsite responders) are adequately prepared.

Alternative arrangements are established to meet any key response functions should the primary means delivering this function be disrupted.

Controlled hard copies of emergency plans, procedures and instructions are available for use during an emergency (for circumstances where electronic versions are not available).

All elements of the emergency plan is reviewed periodically (Reg. 50).

Training of workers meets industry standards. Training of drill and exercise controllers is also undertaken.

Workers response is resilient - workers know what has happened, know what to do, know what to look for, and know what to expect.

Workers demonstrate good knowledge of the facilities, apparatus and sources for which they are responsible.

The undertaking of drills and exercises is spread among the workers with EPR responsibilities.

Drills and exercises are well planned. Planning is undertaken on the basis of maximising capability (rather than simply demonstration a good recovery from a specific scenario).

BM 8.1.4 - Hazard and threat assessments are conducted and regularly reviewed. These assessments consider beyond design basis emergencies including the effects to multiple facilities and regional infrastructure. Local, regional and international experience is considered. Safety cases, emergency plans and procedures are updated appropriately to reflect the outcome of the assessments.

BM 8.1.5 - Lessons from operational events, drills training and exercises are identified and learnt. Learning is evident in the revisions of emergency response plans, procedures, instructions and is incorporated into training.

OBJECTIVE	CRITERIA	SUB-CRITERIA
	<p>BM 8.1.6 - Where appropriate, emergency planning takes account of the demands on human performance and endurance. This should include the demands placed on workers responding to long term events.</p>	
	<p>BM 7.1.7 - Workers who may have been exposed to laser equipment undergo regular eye examination.</p>	
<p>BM 8.2 - Emergency Response is demonstrated to be effective through actions taken during emergencies, drills and exercises.</p>	<p>BM 8.2.1 - Emergency situations are detected immediately and any required notifications (internal and external) are made promptly. There is compliance with the requirements for reporting under Reg 46 or the licence.</p>	
	<p>BM 8.2.2 - The nature of the emergency or incident is assessed, characterised and managed promptly from a safety and security perspective; and by workers that are appropriately knowledgeable of operational matters.</p>	
	<p>BM 8.2.3 - The emergency response plan is properly implemented to ensure that adequate resources are activated, escalated and de-escalated as appropriate and that response actions are clearly terminated.</p>	
	<p>BM 8.2.4 - Effective strategies are used to manage the emergency.</p>	<p>Priorities and strategies are established. Key responsibilities of reactivity control, fuel cooling and containment/confinement are appropriately addressed.</p> <p>Effective non-technical skills are evident - Good communication is established (communications are timely and accurate), there is effective leadership, team working and situational awareness. Decision making processes are sound. Note: team working practices and leadership style will differ from that used during normal operations. Leaders are more directive than consultative during an emergency.</p> <p>There is good monitoring of performance and response efforts.</p> <p>Equipment and resources are properly managed, including over emergencies of a long duration.</p>

OBJECTIVE	CRITERIA	SUB-CRITERIA
	<p>BM 8.2.5 - Mitigation actions are appropriately undertaken in accordance with emergency plans, procedures and instructions. Safety outcomes override production and the protection of plant and equipment.</p>	
	<p>BM 8.2.6 - Radiation and contamination hazards are kept as low as reasonable achievable during the emergency response. There is compliance with emergency dose limits.</p>	
	<p>BM 8.2.7 - Injuries are treated appropriately</p>	
	<p>BM 8.2.8 - The public are kept appropriately informed of the circumstances surrounding the emergency and of any precautionary or urgent protective actions required to be undertaken.</p>	
	<p>BM 8.2.9 - Decisions are made by suitable qualified and experienced persons in accordance with stated accountabilities.</p>	
<p>BM 8.3 - Leadership for Emergency Response and Preparedness - Leaders prepare the organisation to respond to emergencies. Leaders install a culture of watchfulness and take opportunities to continuously improve.</p>	<p>BM 8.3.1 - High standards and expectations for ERP are reinforced by the organisations leadership</p>	
	<p>BM 8.3.2 - Leaders foster a culture of reporting events and near misses from which opportunities for improvement are identified and acted on in a non-punitive environment. A level of vigilance is instilled and complacency is discouraged.</p>	
	<p>BM 8.3.3 - Managers ensure that there are adequate resources available for the establishment and maintenance of EPR functions.</p>	

CC1 – SAFETY CULTURE

The organisation has, at all levels, shared values and beliefs for safety that produce behaviour norms which provide an appropriate and demonstrable attention to safety.

Reference: REG-INS-SUP-280Q - December 2015.

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>CC 1.1 - Safety and security are clearly recognised values - The importance of safety and security is apparent in all business undertakings even when there is no apparent direct link. Safe and secure operations are socially accepted.</p>	<p>CC 1.1.1 - Priority to safety - documentation, communications and decision making demonstrate that a high priority is given to safety and security.</p>	
	<p>CC 1.1.2 - Business Plans show the importance of safety and security.</p>	
	<p>CC 1.1.3 - Considerations in resourcing - Safety and security is a primary consideration in the allocation of resources. There is a proactive and long term approach to safety and security.</p>	
	<p>CC 1.1.4 - Safety and production go hand in hand - Individuals at all levels are convinced that safety and production are mutually supportive.</p>	
	<p>CC 1.1.5 - Safety and Security conscious behaviour is socially accepted and supported (both formally and informally) throughout the organisation.</p>	
<p>CC 1.2 - Leadership for safety and security is clear - Leaders have personal qualities, behaviours, styles and strategies that inspire, motivate and support other team members to achieve safe and reliable operations. Leaders establish, support and reinforce high standards of safety excellence to meet team objectives using international best practice</p>	<p>CC 1.2.1 - Leaders always demonstrate real commitment to safety and security. This commitment is recognised by workers at all levels. Leaders always model safe and secure behaviours.</p>	<p>Promotion of Safety and Security - Leaders look for new ways to better promote safety and security in the workplace</p>
	<p>CC 1.2.2 - Commitment to Safety and Security is evident at all levels of management. Management are involved in safety and security related activities.</p>	
	<p>CC 1.2.3 - Conservative decision making - Leaders provide informed questioning and strong oversight for safety and security and clearly and visibly support conservative decision-making.</p>	<p>Leadership Knowledge - Leaders have good understanding of how work is planned and how it is undertaken.</p> <p>Leadership Training - Leaders receive basic training in the work being undertaken. Leaders participate in EPR training and exercises.</p>

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>safety standards. Leaders monitor safety and take prompt intervention at signs of declining or poor performance.</p>	<p>CC 1.2.4 - Leadership ensures that safety and security is not just on paper - safe practices are followed even when difficult or inconvenient.</p>	<p>Collaboration is Encouraged between management and workers.</p>
	<p>CC 1.2.5 - Communication and openness - Management shows a continual effort to strive for openness and good communication throughout the organisation (both vertically and horizontally) whilst being mindful of the need to maintain appropriate security practices. Management seeks the active involvement of individuals in improving safety and security.</p>	
	<p>CC 1.2.6 - Acceptance of good and bad news - Management is receptive and seeks out operational information, both good and bad.</p>	<p>Reporting Practice - Leaders actively seek information on safety and security threats and vulnerabilities and deviations.</p> <p>Safety and Security is a Meeting Topic - Leaders discuss safety as a normal part of business meetings.</p> <p>Workers consider Leaders to be Approachable of all safety and security topics.</p>
	<p>CC 1.2.7 - Relationships with workers - Relationships between managers and workers are built on trust.</p>	
	<p>CC 1.2.8 - Criticism is welcomed - Management objectively and constructively welcomes constructive criticism from both internal and external sources.</p>	
	<p>CC 1.2.9 - Perverse incentives are avoided - Leadership recognises the potential for perverse incentives.</p>	
	<p>CC 1.2.10 - Leadership takes account of synergies between Safety and Security and recognises potential conflicting requirements. Leaders foster an approach that integrates safety and security in a mutually supporting manner.</p>	
<p>CC 1.3 - Accountability for safety and security is clear - Workers at all levels of an</p>	<p>CC 1.3.1 - Responsibility for safety - It is acknowledged that the ultimate responsibility for safety lies with the licence holder (rather than the regulatory, contractor or other service provider).</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>organisation understand and accept their responsibilities for safety and security. Accountabilities are documented in everyday procedures and instructions. The special nature of nuclear safety and radiation protection is reflected in the quality of work activities.</p>	<p>CC 1.3.2 - Delegation of responsibility - Management delegates responsibility with appropriate authority establishing clear accountabilities. Ownership of safety and security is evident and understood at all levels.</p>	<p>Change Management processes are followed when a difficulty is encountered with procedure or instruction. Un-authorized and long term deviation from an approved procedure is not tolerated.</p> <p>Management and workers strive to understand the unexpected - The reporting of deviations is undertaken for good as well as bad outcomes and investigations are undertaken where appropriate (organisational curiosity).</p>
	<p>CC 1.3.3 - There is a high level of Compliance with procedures and instructions. Deficient proceeds and instructions are identified and corrected promptly to meet safe and secure operational needs.</p>	
	<p>CC 1.3.4 - Reporting of deviations. Where there is a deviation from procedures, it is reported, risks are assessed and the procedures are updated (where appropriate in a timely manner).</p>	
<p>CC 1.4 - Safety and Security is integrated into all activities - Considering the safety and security implications of work is a routine process which is undertaken daily as normal business. This routine is reinforced through organisational policies and procedures.</p>	<p>CC 1.4.1 - Safety and Security is part of each business activity. It is evident that all business areas understand the impact that they have on safety and security.</p>	
	<p>CC 1.4.2 - High standards of documentation, procedures and instructions are maintained throughout the organisation.</p>	
	<p>CC 1.4.3 - Knowledge and understanding of work processes - Individuals of the necessary knowledge and understanding of work processes affecting them. Leaders have wide awareness of work processes.</p>	
	<p>CC 1.4.4 - Factors affecting motivation and job satisfaction are given due consideration. Good working conditions exist in regard to production pressures, workloads and stress.</p>	
	<p>CC 1.4.5 - There is cross functional and interdisciplinary cooperation and teamwork.</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>CC 1.5 - Safety is learning driven - Good levels of organisational curiosity are present. People at all levels make efforts to understand, learn and share operational experience. Performance indicators are used to evaluate actual performance. The reason for any deviation from an expected outcome is sought, where warranted by investigation and analysis.</p>	<p>CC 1.4.6 - Commitment to excellence is evident including through housekeeping and material conditions.</p>	
	<p>CC 1.5.1 - Questioning attitudes - Questioning attitudes prevail at all organisational levels. Lateral thinking is encouraged and engaged. Distancing through differencing is discouraged.</p>	
	<p>CC 1.5.2 - Normalisation of risk - Past success does not lead to complacency about risks or the normalisation of unsafe activities.</p>	
	<p>CC 1.5.3 - Open reporting of deviations takes place when something unexpected occurs, even when the outcome is good. Learning is facilitated an ability to recognise and diagnose deviations, the formulation of effective solutions and the review of modifications.</p>	
	<p>CC 1.5.4 - Organisational and operating experience is utilised in the development of training programs. The effectiveness of training is assessed in the workplace.</p>	
	<p>CC 1.5.5 - Learning from external experience - Training needs take account of external lessons in similar industries.</p>	
	<p>CC 1.5.6 - Safety and Security performance indicators are used to track, trend and evaluate performance. Results are acted on.</p>	
<p>CC 1.6 - Integration across organisational boundaries - There are systems and a</p>	<p>CC 1.5.7 - Development of individual competencies - Processes are used to systematically develop individual competencies that take account of developing operational knowledge and experience.</p>	
	<p>CC 1.6.1 - There is good communication and cooperation on safety and security matters across the entire organisation (taking into account any special security considerations)</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>willingness across the organisation to work together in order to improve safety. A central safety group co-ordinates this effort and has real powers of intervention to enact improvements.</p>	<p>CC 1.6.2 - An independent safety group, reporting directly to the CEO, exercises real powers to investigate and intervene across the organisation.</p>	

CC2 – HUMAN PERFORMANCE

Human performance standards and expected behaviour are defined, established, and verified. Standards are incorporated into an organisation’s programmes, processes and training. The organisation views human performance as integral to high levels of safety and security. The organisation maximises the strengths and minimises the weaknesses of human performance by providing workers with appropriate policies, processes, practices and equipment.

Information from reference: REG-INS-SUP-280R - December 2015

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>CC 2.1 - The controlled activity is conducted by suitably qualified and experienced personnel (sqep) - the safety and security functions of positions is assessed. There are systems in place and used to ensure that key positions are filled with sqep. Tasks of safety and security importance are competently undertaken.</p>	<p>CC 2.1.1 - Managers uphold human performance standards and behaviours in their workers - expected performance standards are clearly stated and understood. The reasons for inadequate performance standards are diagnosed and treated.</p>	
	<p>CC 2.1.2 - Human performance standards are met</p>	<p>There is good adherence to procedures and instructions. The failure to and reasons for not following procedures and instructions are identified and fixed in a timely manner.</p> <p>Verbal communication protocols are established and used. Verbal communication is accurate and employs suitable two or three way feedback. (feedback may be informative, corrective or reinforcing)</p> <p>Peer group or co-worker checking is used to verify the accuracy of tasks where appropriate</p> <p>Managers have effective knowledge and oversight of how work is actually performed managers and leaders take proactive steps to maintain and improve standards.</p>
	<p>CC 2.1.3 - There is no over reliance on technological safety systems - human aspects of defence in depth are reinforced with workers and complacency is avoided.</p>	
	<p>CC 2.1.4 - management and workers demonstrate resilient performance - managers and workers response to the actual, monitor the critical, learn from the factual and anticipate the potential (the cornerstones of</p>	<p>Workers respond to variations the actual conditions - workers respond appropriately to disturbances by adjusting normal functioning and implemented prepared responses where available.</p>

OBJECTIVE	CRITERIA	SUB-CRITERIA
	resilience)	<p>Workers monitor and address critical safety and security parameters - workers know what to look for, where to look and when to look. Identified issues are appropriately addressed.</p> <p>Workers learn from operational events and experience - workers know what has happened and learn the right lessons (from success as well as failure).</p> <p>Workers anticipate and address the potential - workers know what to expect and how to anticipate safety and security threats and opportunities. Workers understand potential disturbances, pressures and consequences.</p>
<p>CC 2.2 - Facility and process design is supportive of safe and secure human performance - the workplace is designed to take account of the strengths and weaknesses in human performance and to maximise safety and security. Human performance is a factor considered in all stages of the design, operation, and modification of a controlled activity and is subject to regular review.</p>	<p>CC 2.2.1 - Good human performance is supported by the ergonomic design of the source or facility - hardware design takes account of the potential for human error. The design helps to reduce the likelihood and mitigate the consequences of error.</p>	
	<p>CC 2.2.2 - Processes are ergonomic and take into account the strengths and weaknesses of human performance - process design examines the potential for human error and takes appropriate actions to reduce the likelihood or mitigate the consequences of error.</p>	
	<p>CC 2.2.3 - Performance management procedures, instructions and training requirements for dealing with deviations in human performance are prepared and followed.</p>	
	<p>CC 2.2.4 - Workers maintain focus on safe and secure operations - where deviations occur and there is uncertainty, workers are able to safely stop, seek assistance and prepare for any unexpected consequences. Such events are recorded and used for learning purposes. Workers and management support and assist the learning from operational deviations.</p>	
	<p>CC 2.2.5 - The workplace environment supports good human performance - the physical environment is controlled to optimise human performance (ventilation, temperature, humidity, lighting, noise, etc).</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
CC 2.3 - non-technical skills (communication, leadership, situational awareness, team-working and decision making) are used effectively to support the safe and secure operation of the source or facility.	CC 2.2.6 - Defence in depth principles provide a good mix of human and technological barriers to prevent and detect human error and/or mitigate its consequences.	
	CC 2.3.1 - Important safety and security information is communicated effectively - communication is used to drive human performance by the transfer of information, feedback or response, ideas and feelings. Communication provides knowledge, institutes relationships, establishes predictable human behaviour, and maintains attention to tasks.	
	CC 2.3.2 - Leadership for safety and security is effective - leaders guide and support high levels of human performance within their teams. Team leaders provide positive influence on the motivation, values and behaviour of their team.	
	CC 2.3.3 - Safety and security objectives are achieved using effective teams - multi-disciplinary teams are used as needed for routine operations and for problem solving. Workers co-operate as part of a team to achieve common goals.	
	CC 2.3.4 - There is effective decision making for spontaneous decisions related to operations - un-planned decisions of workers, including when under pressure are correct.	
CC 2.4 - The business environment is supportive of	CC 2.4.1 - Business and production pressures do not impact on safety and security	

OBJECTIVE	CRITERIA	SUB-CRITERIA
good human performance - demands placed on workers promote good human performance. Business strategies are mindful and avoid negative impact on human performance.	CC 2.4.2 - There are no perverse incentives - business objectives and performance indicators and reward systems do not cause or encourage risk taking, short-cuts or complacency	

CC 3 – PERFORMANCE IMPROVEMENT

The organisation learns from operational experience. Lessons are learnt from mistakes, mishaps, errors and where there is a deviation from an expected outcome. Corrective action programs identify, evaluate and fix problems. Learning opportunities are identified from within and outside the organisation.

Information from reference: REG-INS-SUP-280S - December 2015

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>CC 3.1 - Changes are subject of post implementation review and where appropriate, ongoing monitoring. Reviews are undertaken to determine whether implemented solutions and improvements have helped the organisation to improve safety and security performance. Where necessary, consequential changes are made to performance criteria, monitoring and analysis processes to match the improved safety and security performance of the organisation.</p>	<p>CC 3.1.1 - Changes are reviewed post implementation. Any gap between desired and actual performance is assessed for safety and security significance.</p> <p>CC 3.1.2 - Monitoring of improved performance is undertaken over a suitable period to prove the performance is permanent or sustainable for the duration needed.</p>	
<p>CC 3.2 - Performance requirements are defined and understood - workers understand the safety performance requirements relating to people and the controlled sources and facilities under their responsibility. When performance differs from what is expected, systems are implemented to understand and</p>	<p>CC 3.2.1 - Leadership and workers demonstrate curiosity and strive for understanding when performance of people, structures, systems and components differs from requirements.</p> <p>CC 3.2.2 - Consideration beyond the immediate - the implications and causes of performance variations are considered for the direct issue and across the organisation (first and third party applicability)</p> <p>CC 3.2.3 - Distancing through differencing is avoided - leadership and workers are committed to implement corrective actions even when not directly involved with the originating issue.</p>	

OBJECTIVE	CRITERIA	SUB-CRITERIA
manage the deviation.	CC 3.2.4 - Benchmarking is used in the determination of performance requirements. Performance requirements are refreshed by regular review and adjustment.	
	CC 3.2.5 - There is ownership and accountability for corrective activities and programs	
	CC 3.3.6 - Approaches to human performance are based on 'diagnose and treat' rather than 'crime and punishment'	
CC 3.3 - There is effective monitoring and reporting of performance - performance monitoring occurs frequently to determine whether the defined safety and security performance has been achieved. Appropriate indicators are selected and used to report and monitor safety and security performance	CC 3.3.1 - Surveillance activities are undertaken - key safety and security performance indicators are established and routinely monitored. Indicators are designed to alert and correct deficient performance.	
	CC 3.3.2 - Systems are implemented to capture non-routine performance data - non-routine performance data is captured and reported. Leaders promote a culture which identifies threats and opportunities leading to continuous performance improvements	
	CC 3.3.3 - Hard to explain data - performance data is recorded even when it can not be readily explained - the safety significance of is evaluated in allocating resources to investigate deficient or declining performance.	
	CC 3.3.4 - Maintenance and engineering support for performance monitoring and reporting - workers involved in maintenance and engineering activities demonstrate watchfulness in regard to the performance of structures, systems and components. Performance observations are recorded and reported were appropriate.	CC 3.3.4.1 - Trends are identified - e.g. for items important for safety: the implications of sensor drift are considered on calibration periods rather than simply re-calibrated; the failure mode of components is identified where feasible; there is reconciliation of the physical condition of components to the expected component life
	CC 3.3.5 - Performance variation is screened for safety - variations from expected performance are subject to timely review for safety implications and appropriate actions are taken.	

OBJECTIVE	CRITERIA	SUB-CRITERIA
<p>CC 3.4 - Performance data is appropriately analysed - the organisation analyses reported performance data for safety and security implications. The details and reasons for deviations are understood.</p>	<p>CC 3.4.1 - Performance data is a leading indicator and is used to bring about early intervention before safety and security issues become significant. Corrective actions are prioritised with due consideration of safety.</p>	
	<p>Cc 3.4.2 - Analysis of performance data is leadership led and multidisciplinary. Analysis is broadly applied and used by management.</p>	
	<p>Cc 3.4.3 - Appropriate analysis tools are used to identify gaps between actual performance and performance requirements.</p>	
	<p>Cc 3.4.4 - Investigations are undertaken of unexpected conditions or performance in a timely manner with due consideration of safety and security risks.</p>	
	<p>Cc 3.4.5 - Human error is not the endpoint of investigations - human and organisational factors are investigated where human error contributes to performance deficiencies (leadership, training, procedures and instructions, operational environments, etc.)</p>	
	<p>Cc 3.4.6 - Review of external industry standards and practices is considered during analysis of performance data. Learning from other industry players is shown.</p>	
<p>CC 3.5 - performance improvements are planned and implemented in a timely manner - systems are used to design and implement appropriate control measures to ensure performance is maintained or improved. Measures to improve performance are designed in consultation with workers and with regard to international best practice. Formal change</p>	<p>CC 3.5.1 - Smart goals are used to develop improvements</p>	<p>Specific - who, what, where, when, which, why</p> <p>Measurable - how much, how many, how is accomplishment demonstrated</p> <p>Attainable - there are adequate resources allocated to achieve the improvement objectives</p> <p>Reviewable - there are systems in place to review the effectiveness and an improvement and take remedial action if requirements are not met.</p> <p>Timely - improvements are be implemented in a timely manner commensurate with the safety and security significance.</p>

OBJECTIVE	CRITERIA	SUB-CRITERIA
management processes are applied where appropriate.	CC 3.5.2 - The development and implementation of improvements is proportional to the safety and security risks	
	CC 3.5.3 - Consultation - the development and implementation of improvements is undertaken in consultation with workers	
	CC 3.5.4 - Improvements are monitored by management - improvements are supported and monitored by management	
	CC 3.5.2 - The development and implementation of improvements is proportional to the safety and security risks	
	CC 3.5.3 - Consultation - the development and implementation of improvements is undertaken in consultation with workers	
	CC 3.5.4 - Improvements are monitored by management - improvements are supported and monitored by management	

SOURCE LICENCE

The holder of a source licence meets its requirements for compliance with the ARPANS Act. It meets high standards and best practice. The use of controlled apparatus and radioactive sources is holistically underpinned by a good organisational safety culture, human performance and a process of performance improvements.

Information from reference: REG-INS-SUP-280G - December 2015

Objective	Criteria
<p>1 - Performance reporting verification - The licensee organisation has an open reporting culture that supports learning and continuous improvement. Reporting to arpana meets the requirements specified in the current licensing basis (the act, regulations and the details relied upon to gain a licence or those subsequently updated and approved).</p>	<p>1.1 - Internal safety and security reporting requirements are established and met. Deficiencies are categorised according to safety and security importance and are fixed in a timely manner</p> <p>1.2 - Responsibility and accountability for reporting is defined, understood and implemented</p> <p>1.3 - Reporting to arpana is open and transparent and meets the licensing requirements. Reported data is accurate and complete.</p>
<p>2 - Configuration Control - the licensee has, at all times, knowledge of the physical condition and operational methods of controlled plant or material. Safety margins are met and operations remain within the constraints of the safety case. The impact of any changes on safety margins is characterised and understood.</p>	<p>2.1 - Monitoring and management of safety margins - actual design and operating margins are understood and proactively managed within the bounds of the safety case. Organisational drift is identified and managed.</p> <p>2.2 - Management of change - any changes to the licensed activity are undertaken in consideration of the safety case. The impact on nuclear safety and radiation protection safety margins is understood at all times.</p> <p>2.3 - Management of temporary change - the planning and management of temporary changes to a controlled activity, plant or equipment is undertaken in a similar process to permanent changes.</p> <p>2.4 - nuclear and radioactive material management practices ensure the safety and security of nuclear and radioactive material</p>
<p>3 - Inspection, Testing, and Maintenance - the licensee has a program in place for the routine inspection, testing and maintenance of controlled apparatuses and sources. All inspection, testing and maintenance</p>	<p>3.1 Contamination monitoring, scheduled and reactive maintenance is undertaken as required - checks for contamination are carried out periodically and after a spill or other such failure.</p> <p>3.2 - Testing of equipment (routine and reactive) is conducted - the requirements for frequency, relevance, quality assurance of routine and reactive testing of equipment and sources is specified and followed.</p>

Objective	Criteria
<p>requirements defined in relevant codes of practice and Australian standards are followed.</p>	<p>3.3 - Qualifications and procedures of both internal and external providers are up-to-date, relevant and meet appropriate licence requirements</p>
<p>4 - Training - a systematic approach to training is used, i.e. training programmes are the result of training needs, design and development, effective implementation and evaluation of outcomes. Training ensures that all workers are suitably qualified and experienced so that the controlled activity is undertaken safely and securely. Leadership is fully engaged in ensuring that training supports high standards of human performance.</p>	<p>4.1 - training requirements are identified and defined for all roles important for safety.</p> <p>4.2 - training programs are developed to fully meet training needs.</p> <p>4.3 - training is implemented according to a developed plan and is delivered by persons with competent in training.</p> <p>4.4 - the effectiveness of training is regularly reviewed.</p>
<p>5 - Event protection - the licensee has considered and implemented controls regarding the effects of outside influences on the controlled apparatus or sources. (examples of events to be considered include: fire, flood, cyclones, tidal waves, earthquake, lightning strike, other weather events or natural disasters; partial or total building collapse; tree crane or other structural impact; terrorist, riot, civil unrest or other human aggression; utility failures such as loss or excess of water, gas, electricity; attack by rodents or other pests.)</p>	<p>5.1 - Procedures are in place to mitigate the consequences of external events.</p> <p>5.2 - Barriers are in place to prevent, as far as practicable, the effects of external events. Building construction is appropriate for foreseeable events.</p>
<p>6 - Security - effective security measures prevent unauthorised access or damage to, the loss, theft or unauthorised transfer or the unauthorised use of a radioactive source.</p>	<p>6.1 - Security Culture - the organisation, at all levels, possesses shared characteristics, attitudes and behaviours which serve as a means to support and enhance security.</p> <p>6.2 - The organisation has effective security management arrangements that are supported by a good security culture.</p> <p>6.3 - Physical security arrangements are in accordance with arpansa rps-11, code of practice on the security of radioactive sources (2007).</p>

Objective	Criteria
7 - Radiation Protection - the licensee complies with relevant codes and standards for each controlled apparatus or source to minimise exposure to radiation.	6.4 - Security response - the organisation responds effectively to security threats and incidents. The response is demonstrated during actual incidents, drills and exercises.
	6.5 - Monitoring - there is effective monitoring and management of external and internal threats.
	6.6 - Anticipation - threat environments are actively monitored and managed. Security systems are used to manage identified threats.
	6.7 - Learning is achieved from the evaluation of internal and external incidents and operations
	7.1 - Access control - access to the source is restricted to only those who need it (on paper and in practice).
	7.2 - Interlocks are fitted as required by a code or standard. Interlocks are in working order and are tested regularly. Overrides are under effective administrative control.
	7.3 - Safety design - equipment is designed so that it can be operated safely
	7.4 - dosimetry, personal and area - dosimetry is provided to workers as required. Records are kept and able to be provided to the employee on request. Records of area monitoring are kept and unexpected fluctuations are investigated.
	7.5 - ALARA Principle - doses to workers and the public are optimised.
	7.6 - Radiation monitoring - doses are measured around equipment periodically. Results are recorded and unexpected results are investigated.
7.7 - Administrative control (safe work instructions) - clear instructions on the safe use of the equipment and sources is readily available.	
7.8 - Appropriate shielding - all equipment is shielded to minimise exposure	
7.9 - Transport and disposal - transport of radioactive material is carried out in accordance with the transport code. Disposal of radiation sources is done in accordance with established practices and in compliance with regulatory requirements.	
7.10 - Temporary shielding and personal protective equipment (ppe) is used where appropriate	
8 - Emergency preparedness and response	8.1 - Evacuation procedures are prepared and readily accessible for all foreseeable emergencies

Objective	Criteria
<p>(EPR) - the licensee has procedures in place to cover emergency situations that could compromise the safety of security of the controlled apparatuses or sources. Emergency requirements defined in relevant codes of practice and Australian standards are followed.</p>	<p>8.2 - Unintentional loss of control of sources - the steps to be taken to deal with a source that is no longer under the direct control of the licensee are identified in procedures and instructions</p>
	<p>8.3 - Procedures that cover fire or other non-radiation related hazards at the site do not impact on radiation safety</p>
	<p>8.4 - Incident, accident or emergency reporting procedures - internal and external reporting procedures are established and followed. Procedures take account of regulatory requirements.</p>
	<p>8.5 - Hazard assessment - the potential hazard of sources are established</p>
	<p>8.6 - Securing premises - systems are in place to secure the site in the event of an emergency to prevent loss of, or exposure to, the sources.</p>
	<p>8.7 - Training of workers to deal with emergencies relating to controlled apparatuses or sources covers emergency situations.</p>
	<p>8.8 - Clean-up/decontamination procedures are established for cleaning up or decontamination following the emergency.</p>
	<p>8.9 - Advice to emergency response personnel relating to radiation - emergency response personnel (fire, police, ambulance, etc.) are aware of any potential hazard during an emergency.</p>
	<p>8.10 - Lessons are learnt - systems are in place to avoid recurrence of events. The use of these systems is evident for past events (where applicable).</p>
	<p>9 - Safety Culture - the licensee has, at all levels, shared values and beliefs for safety that produce behaviour norms which provide an appropriate and demonstrable attention to safety.</p>
<p>9.2 - Leadership for safety and security is clear - leaders have personal qualities, behaviours, styles and strategies that inspire, motivate and support other team members to achieve safe and reliable operations. Leaders establish, support and reinforce high standards of safety excellence to meet team objectives using international best practice safety standards. Leaders monitor safety and take prompt intervention at signs of declining or poor performance.</p>	

Objective	Criteria
	<p>9.3 - accountability for safety and security is clear - workers at all levels of the licensee organisation understand and accept their responsibilities for safety and security. Accountabilities are documented in everyday procedures and instructions. The special nature of nuclear safety and radiation protection is reflected in the quality of work activities.</p> <p>9.4 - Safety and security is integrated into all activities - considering the safety and security implications of work is a routine process which is undertaken daily as normal business. This routine is reinforced through organisational policies and procedures.</p> <p>9.5 - Safety is learning driven - good levels of organisational curiosity are present. People at all levels make efforts to understand, learn and share operational experience. Performance indicators are used to evaluate actual performance. The reason for any deviation from an expected outcome is sought, where warranted by investigation and analysis.</p> <p>9.6 - Integration across organisational boundaries - there are systems and a willingness across the organisation to work together in order to improve safety. A central safety group co-ordinates this effort and has real powers of intervention to enact improvements.</p>
<p>10 - Human Performance - human performance standards and expected behaviour are defined, established, and incorporated into an licensee programmes, processes and training. The licensee views human performance as integral to high levels of safety and security. The licensee maximises the strengths and minimises the weaknesses of human performance by providing workers with appropriate policies, processes, practices and equipment.</p>	<p>10.1 - The controlled activity is conducted by suitably qualified and experienced personnel (SQEP) - the safety and security functions of positions are assessed. There are systems in place and used to ensure that key positions are filled with SQEP. Tasks of safety and security importance are competently undertaken. (Includes resilient behaviours: ability to respond, to monitor, to learn and to anticipate.)</p> <p>10.2 - Non-technical skills (communication, leadership, situational awareness, team-working and decision making) are used effectively to support the safe and secure operation of the source or facility.</p> <p>10.3 - Facility and process design is supportive of safe and secure human performance - the workplace is designed to take account of the strengths and weaknesses in human performance and to maximise safety and security. Human performance is a factor considered in all stages of the design, operation, and modification of a controlled activity and is subject to regular review.</p> <p>10.4 - The business environment is supportive of good human performance - demands placed on workers promote good human performance. Business strategies are mindful and avoid negative impact on human performance.</p>

Objective	Criteria
<p>11 - Performance improvement - the licensee learns from operational experience. Lessons are learnt from mistakes, mishaps, errors and where there is a deviation from an expected outcome. Corrective action programs identify, evaluate and fix problems. Learning opportunities are identified from within and outside the licensee organisation.</p>	<p>11.1 - Performance requirements are defined and understood - workers understand the safety performance requirements relating to people and the controlled sources and facilities under their responsibility. When performance differs from what is expected, systems are implemented to understand and manage the deviation.</p>
	<p>11.2 - There is effective monitoring and reporting of performance - performance monitoring occurs frequently to determine whether the defined safety and security performance has been achieved. Appropriate indicators are selected and used to report and monitor safety and security performance</p>
	<p>11.3 - Performance data is appropriately analysed - the licensee analyses reported performance data for safety and security implications. The details and reasons for deviations are understood.</p>
	<p>11.4 - Performance improvements are planned and implemented in a timely manner - systems are used to design and implement appropriate control measures to ensure performance is maintained or improved. Measures to improve performance are designed in consultation with workers and with regard to international best practice. Formal change management processes are applied where appropriate.</p>
	<p>11.5 - Changes are subject of post implementation review and where appropriate, ongoing monitoring - reviews are undertaken to determine whether implemented solutions and improvements have helped the licensee to improve safety and security performance. Where necessary, consequential changes are made to performance criteria, monitoring and analysis processes to match the improved safety and security performance of the licensee organisation.</p>