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Replacement Research Reactor Project

PLAN FOR MAINTAINING EFFECTIVE CONTROL

Prepared By
Australian Nuclear Science and Technology Organisation

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1 PURPOSE AND SCOPE – EFFECTIVE CONTROL

The purpose of this Plan is to demonstrate that all activities undertaken that impact on the Reactor Facility will be effectively controlled by ANSTO and comply with all applicable requirements of the ARPANS Act and Regulations.

The scope of this Plan is all activities undertaken within the Reactor Facility, together with activities undertaken beyond the Reactor Facility but having an impact on it.

1.1 ACCOUNTABILITY

ANSTO is the organisation responsible for the safe operation of the Reactor Facility. It is the centre for nuclear research and development, and provides a broad range of technical expertise to support national interests. ANSTO is a body corporate established by the Australian Nuclear Science and Technology Organisation Act of 1987. The functions and general powers are set out in the Act. ANSTO sets out its broad directions through its strategic plan and its specific commitments and processes in its policies and procedures.

ANSTO is the Reactor Facility licensee and, as such, has responsibility for all elements required to ensure safe operation. It has many years of experience in research reactor operations and has implemented specific processes and procedures to ensure that all staff are aware of the licence conditions and that designated staff understand their roles in maintaining compliance with regulatory requirements and licence conditions.

Responsibility is delegated to authorised personnel within a framework that ensures ANSTO remains ultimately accountable and that appropriate review and monitoring are conducted. These responsibilities are set out in authorised delegations, in safety directives and in the quality management system documents used in operation of all facilities. Key roles and responsibilities for the Reactor Facility are identified in Section 4 of this plan. Each facility has a designated Nominee and Facility Officer, whose roles are described in the relevant quality certified procedures.

The Organisation Chart is shown in Figure 13.2/1-1 of Chapter 13 of the Safety Analysis Report for the Reactor Facility.

1.2 ARRANGEMENTS

ANSTO has established arrangements to effectively control technical, administrative and human factors associated with Reactor Facility activities. The arrangements for the Reactor Facility comply with the general policies, safety management systems and quality requirements of ANSTO.

Lines of communication, responsibilities and authorities, functions, duties and competencies associated with these activities are appropriately documented and administered through the Reactor Facility Management System which is outlined in Figure 1.

This plan should be read in conjunction with other plans, specifically those relating to safety management, radiation protection, environmental management and waste management.

1.3 MANAGEMENT SYSTEMS

ANSTO's overall objectives and commitments are described in its policies, which are authorised by the Executive Director and the ANSTO Board. The processes and commitments are implemented through site-wide over-arching processes, supplemented by local arrangements.

ANSTO has established appropriate management systems consistent with AS/NZS ISO standards and will ensure that they are implemented and maintained to manage all activities associated with the Reactor Facility. The scope of the management systems includes the

ANSTO organisation-wide Business Management System (ABMS) and the Reactor Facility Quality Management System (QMS).

The QMS Manual includes the Quality Policy for the Reactor Facility, documenting the management commitment and priority given to implementation of arrangements to ensure all the Effective Control objectives are met. The Manual also identifies key quality and safety objectives and provides details of the relevant plans and arrangements. There are three appendices to this Plan that provide references to relevant policies and procedures:

Appendix 1 lists the QMS procedures and identifies the scope of each procedure.

Appendix 2 identifies where the expectations of the ARPANSA Plans and Arrangements for Effective Control are met in the QMS procedures.

Appendix 3 identifies where the ARPANSA standard licence condition, the AS/NZS 9001:2000 and the AS/NZS 14001:2000 requirements are met in the QMS procedures.

1.4 RESOURCE REQUIREMENTS

ANSTO will ensure that adequate and appropriate human, financial and material resources are provided to effectively implement the plans and arrangements for radiation protection and nuclear safety and to maintain effective control over all activities associated with the Reactor Facility.

Each facility is operated as part of an ANSTO project, with an assigned budget and human resources under the control of the relevant manager. In addition to review of the facility's overall performance, all staff have annual objectives for operation and safety and these are reviewed as part of ANSTO's performance management system.

Resourcing is managed via relevant Nuclear Reactor Procedures (NRP) contained in the Reactor Facility QMS and include NRP 01, NRP 06 and NRP 08, which are identified and summarised later in this plan.

Staffing plans for the facility are described in chapter 13 of Part C of this application.

2 REFERENCES

Regulatory Guideline on Review of Plans and Arrangements, ARPANSA, RB-STD-15-03, Version 0, August 2003

AS/NZS 9001:2000 Quality Management System

3 DEFINITIONS

The following definitions have been used in this plan:

Reactor Facility	The Reactor Facility means the multipurpose research reactor that will replace HIFAR, and its associated buildings, physical plant, structures, components and systems including software and, where relevant, any management systems necessary to achieve the design, construction and operation of the facility.

The following abbreviations have been used in this plan:

ABMS	ANSTO Business Management System
ALARA	As Low As Reasonably Achievable
AOR	Abnormal Occurrence Report

APOL	ANSTO Policy
BDBA	Beyond Design Basis Accident
CMMS	Computerised Maintenance Management System
DBA	Design Basis Accident
FAA	Follow-up Action Assignment
KPI	Key Performance Indicator
NPT	Nuclear Non-Proliferation Treaty
NFP	Nuclear, Fuel Management Procedure
NRP	Nuclear, Reactor Facility Procedure
NWP	Nuclear, Waste Management Procedure
OOR	Operational Occurrence Report
OSRP	Objective Setting and Review Process
QMS	Quality Management System
PSA	Probabilistic Safety Assessment
RRR	Replacement Research Reactor
SAR	Safety Analysis Report
SD	Safety Directive

4 ROLES AND RESPONSIBILITIES

The roles and responsibilities associated with the implementation of this plan are as identified in this section.

4.1 MANAGER REACTOR OPERATIONS

The Manager Reactor Operations is the Licence Nominee for the Reactor Facility and has overall responsibility for the safety and operation of the Reactor Facility at all times, consistent with ANSTO policies and general arrangements. The Nominee is delegated to make, amend or vary the application in the name of ANSTO, pursuant to Section 34 of the ARPANS Act 1998 and regulation 39 of the ARPANS Regulations 1999.

4.2 REACTOR MANAGER

The Manager Reactor Operations has delegated responsibility for implementation of this Plan to the Reactor Manager. The Reactor Manager is responsible for planning and managing resources to ensure the safe and effective operation of the reactor facility.

5 PLANS AND ARRANGEMENTS

5.1 DOCUMENTATION SYSTEM

The plans and arrangements for maintaining effective control of the Reactor Facility are implemented by a hierarchical documentation system identifying the administrative processes

by which the facility is safely and effectively managed. This is achieved primarily through the Reactor Facility Quality Management System (QMS), together with the integration of other safety and administrative processes, relating specifically to the Reactor Facility and to the wider ANSTO organisation. The QMS has been developed to be an integral part of the ABMS. The QMS also identifies services provided to the Reactor Facility by other organisational units by way of Service Level Agreements, where appropriate. These services include:

- airborne effluent monitoring for compliance with the Discharge Authorisation, and radiation protection services by Safety and Radiation Sciences;
- liquid effluent sampling and waste handling by Waste Operations and Technology Development; and
- engineering support and inspections by ANSTO Engineering.

Implementation of the QMS is a key means by which the Reactor Facility management communicates its expectations to staff, describes and records the capability of staff to meet those expectations, and the means by which it monitors performance and compliance with regulatory requirements. The QMS brings together, in one system, administrative controls to ensure safety, regulatory, operational, quality, environmental and commercial objectives are met.

The QMS has been developed to meet the relevant Australian and international requirements, and has drawn upon Australian and international guidance, and international best practice. The requirements for the QMS include:

- ARPANSA Standard Licence Conditions
- AS/NZS 9001 Quality Management System
- AS/NZS 14001 Environmental Management System

Additionally, the following guidance material was considered when developing the system:

- IAEA Safety Series Guides
- ARPANSA RG- Safety Assessment Principles
- ARPANSA RG-13 Plans and Arrangements
- ASME NQA-1 Nuclear Quality Standard

The QMS documentation has been developed to be consistent with the requirements and format of the ANSTO Business Management System (ABMS) certified to AS/NZS 9001:2000 in July 2004, and the ANSTO Safety Management System, including the Safety Directives. This ensures consistency of the application of administrative requirements across the ANSTO site, and an effective interface between the Reactor Facility and other divisions. Where staff of another division are identified as performing functions in the Reactor Facility, appropriate personnel from that division are included in the review process, and sign off as accepting performance of that function.

The experience with the HIFAR Quality Management System (QMS), certified to AS/NZS 9001 in 1996, and recertified in 1999 and 2003, which constitutes the effective plans and arrangements for effective control of HIFAR, has been drawn on in the development of the Reactor Facility QMS. This allows benefit to be derived from the experience of operating a research reactor within a certified quality system framework in the ANSTO and ARPANSA context. A number of human-factors related issues have been recognised in that system through its eight years of use, and the Reactor Facility QMS has been developed to address those issues as well as meet the revised quality and environmental standards and licence requirements that have arisen since development and certification of that system.

These changes primarily relate to rationalisation of the level of detail in the operating procedures and enhancement of clarity. The Reactor Facility QMS documentation provides streamlined procedures, with the greater level of detail being available in referenced and/or subordinate documents. The fundamental difference between the two systems is in the nature of integration of documentation relating specifically to operation of the Facility, namely the systems operating procedures and instructions. The HIFAR QMS has the systems operating procedures and instructions as embedded components of the administrative procedures and instructions whereas the Reactor Facility administrative process manual is separate from the systems-based manuals developed by INVAP. This structuring provides greater clarity in both operating and administrative procedures.

Figure 1 depicts the hierarchy documentation structure related to the Reactor Facility, and the relationship between the Reactor Facility documentation and the ANSTO Quality and Safety Management System.

5.2 DOCUMENTATION SYSTEM DEVELOPMENT AND REVIEW PROCESS

The QMS administrative process procedures listed in Appendix 1 were developed through a process including:

- identification of the standard licence conditions and management system requirements
- series of interactions allowing input from personnel across the ANSTO site with a wide range of experience and expertise in the specific areas
- inclusion of relevant attributes from the referenced guidance material, and
- integrated review

Further documentation includes subordinate instructions and forms required for implementation of the process identified in Appendix 1.

A robust review process was also implemented in the development of the Reactor Facility systems manuals. These manuals include design, operations, user and maintenance manuals and systems procedures, as well as integrated plant operation procedures. These manuals, drafted by the INVAP designers, were reviewed extensively within INVAP for consistency across all other components of the documentation system prior to transmission to ANSTO. The manuals were then provided to ANSTO and reviewed extensively by Operations Planning personnel and RRR Project personnel with specific systems expertise. The criteria employed in these reviews included:

- consistency with the Safety Analysis Report (SAR);
- consistency between manuals of the same system;
- consistency with manual drafting templates;
- clarity of description; and
- human factors aspects

The review of this material provided an excellent opportunity for the proposed operational personnel to develop their understanding of systems design, operation of systems and the interaction of systems.

5.3 DOCUMENTATION SYSTEM PROCEDURES SUMMARY

Following is a summary of the Reactor Facility procedures included in the QMS:

NRP 01 Business Planning and *NRP 02 Management Review* identify the management processes for planning, budgeting, allocation and assessment of implementation of the QMS

plans and arrangements to ensure all objectives and performance indicators are met and that adequate human, financial and material resources are applied to meet all operational, training and safety objectives. They indicate the need for clear lines of communication of issues arising within the Reactor Facility and the wider ANSTO Organisation to be in place, including a means of feedback from staff to management. They also include the setting of performance and development objectives relating to operational, safety, radiation protection and environmental protection matters, the inclusion of these objectives in the Business Plan, and the periodic review of policies, authorisations and staffing requirements.

NRP 03 Process Improvement identifies the processes associated with reporting of non-conformances, including abnormal operating occurrences, the process for taking corrective and preventative measures and the identification of improvements to enhance safety and optimisation of facility availability.

NRP 04 Documentation Management identifies the requirements for preparation, review, approval and revision of documents used within the QMS. NRP 05 *Records Management* provides for maintenance of records of activities undertaken in the facility. They provide for review and agreement of management in other divisions performing tasks in the Reactor Facility.

An essential attribute of a system to maintain effective control is documented arrangements providing defined roles and responsibilities, authorities, delegation, deputing arrangement, lines of reporting and resource management. This information is contained within position Role Profiles and *NRP 06 Operating Organisation*, which also identifies the required qualifications and experience of personnel, and the objectives of the staff selection process, thereby ensuring staff have appropriate attributes and capabilities to perform their respective roles, including sufficient safety awareness. It also identifies responsibilities for communication with external organisations, including ARPANSA. Staff performance is systematically evaluated using ANSTO Human Resources Objective Setting and Review Process (OSRP).

The safe operation of the Reactor Facility is contingent upon an ongoing knowledge of the design basis of the facility, as identified in the relevant safety analysis documents, and an appreciation of the consequences of postulated events which would place the plant outside the safe operating envelope defined in the SAR. Operational Limits and Conditions are established from the SAR. A Probabilistic Safety Assessment (PSA) is provided, identifying the potential fault sequences leading to core damage, and provides Reactor Facility management with insights into potential plant vulnerabilities and dominant fault sequences.

Training in each of these safety-related documents and methodologies is identified in *NRP 07 Training and Personal Development Management*. This procedure also identifies implementation of a Systematic Approach to Training (SAT), including the need for induction, role-specific and ongoing training, the need for accreditation of Reactor Operators, and demonstration of required competencies before staff are authorised to perform work at the facility. Ongoing training includes refresher training, to ensure staff retain knowledge of reactor fundamentals and systems design and operation, as well as training staff on aspects related to plant modification, documentation revision and lessons learnt from operational experience. All training is assessed for effectiveness on completion, as is the training program to identify scope for improvement. An essential element of training is safety awareness and nuclear safety principles, including safety culture and defence-in-depth.

Operation of the Reactor Facility in compliance with the OLCs, systems operating procedures and therefore within the safe operating envelope identified by the SAR, is prescribed by *NRP 08 Conduct of Operations*. This, in turn, ensures operation with an adequate margin of safety to the relevant safety limit. This procedure identifies the need for plant surveillance, reporting of plant degradation and failure, and oversight of maintenance work including plant tagging, isolation and the oversight of contract effort. It also addresses shift handover and control room log keeping arrangements, and lines of communication for reporting issues of operational concern.

NRP 09 Safety Management and *NRP 010 Radiological Safety* collectively identify the means by which the requirements of the ANSTO Safety Management System are implemented within the Reactor Facility.

The need for revision of the licensing and design basis documentation, including the SAR, PSA, OLCs and systems manuals and procedures, arising from plant modifications or for other reasons is identified in *NRP 11 Configuration Management*. This ensures that all safety and operating documentation available to staff is maintained current and consistent with the installed plant.

NRP 12 Maintenance Management identifies the arrangements for preventive and corrective maintenance, including prioritisation of maintenance work commensurate with the safety significance of the system, structure or component, and isolation and tagging of plant. It also identifies the need for functional testing prior to returning the maintained item into service, and the oversight of contract effort as well as support services (maintenance, test and inspection) from other ANSTO divisions. It includes the need for systems to:

- ensure instrumentation calibration remains current;
- ensure that there is an adequate inventory of spare parts; and
- record maintenance and plant history.

Compliance with the OLCs is identified in *NRP 13 Utilisation Management*, which also identifies the need for controls over irradiation of materials by means of the Target and Canning Specifications to ensure there is adequate heat transfer, no excessive build up of pressure or activity, and adequate encapsulation in targets irradiated in the irradiation facilities. Control over the facility users is achieved by training and authorisation.

NRP 14 Core Management identifies the requirements for reactor physics calculation and assessment of approved cores of particular fuel and control rod type and routine, as well as assessment of the performance of any proposed core changes, such as new fuel types or control absorbers. It also includes the assessment of and reporting on core loadings for compliance with the OLCs.

NRP 15 Nuclear Materials Management identifies the processes associated with the handling, storage, transport and accounting of nuclear materials in the reactor facility. This includes meeting ANSTO's safeguards requirements under the *Nuclear Non-Proliferation (Safeguards) Act 1987* and relevant international treaties, which are managed by Government and Public Affairs division.

NRP 16 Radioactive Source Control identifies the arrangements implemented to ensure the integrity of the source containment is monitored, the movement of the sources is controlled and the requirements of relevant ARPANSA licences are complied with.

NRP 17 Waste Management outlines an overview of the process involved with handling both radioactive and non-radioactive wastes to ensure that all wastes are correctly identified, quantified and stored or disposed of safely and responsibly.

NRP 18 Event Response provides an overview of the organisational and local arrangements in response to events at the Reactor Facility, including reference to guidance for response to specific scenarios. It includes activation of site arrangements and communication.

NRP 19 Security Management identifies the physical protection arrangements for the Reactor Facility and the interface with site security arrangements. The arrangements include access restrictions and reference to the ANSTO Security Plan.

NRP 20 Organisational Arrangements During Commissioning identifies the organisational groups involved in commissioning, testing and operational activities, and the associated interfaces, and roles and responsibilities, and lines of reporting and communication, throughout the various stages of the commissioning process.

The objective of the QMS described in these plans and arrangements is the implementation of a systematic and integrated approach to ensure effective control of all activities undertaken by personnel at the Reactor Facility. The QMS provides the framework necessary:

- to implement organisational arrangements focusing on safety and quality objectives;
- to ensure staff have the necessary skills, knowledge and attributes to safely operate the facility, with a strong appreciation of the facility design basis;
- to foster recognition by the staff of the need for their actions to support performance of safety functions; and
- to promote a responsible approach to operation, maintenance of defence-in-depth and a strong safety culture.

Implementation of the system and vigilance on the part of all staff contribute to safe and effective operation, and maximise plant availability in support of the ANSTO mission and organisational objectives.

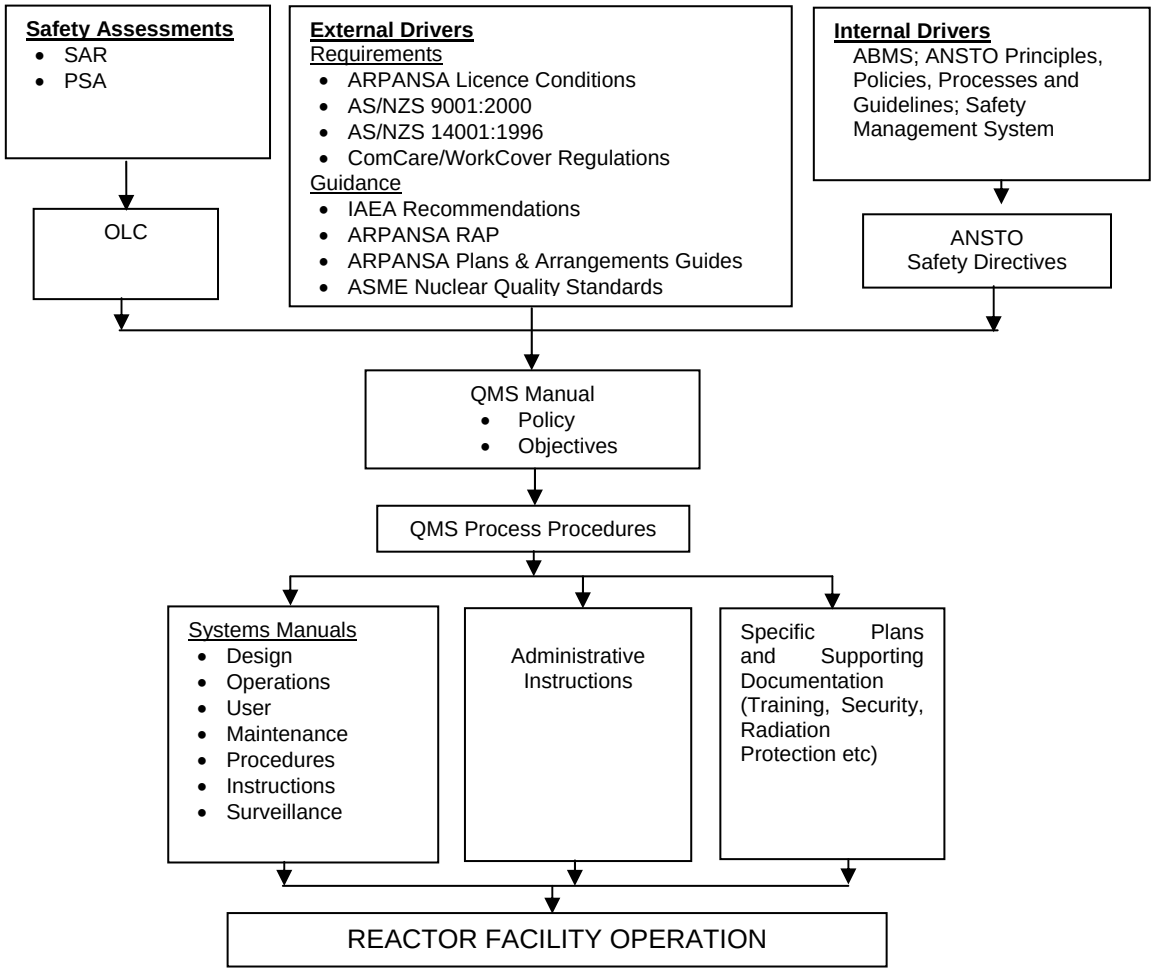

Figure 1 Reactor Facility Management System

6 APPENDIX 1: LISTING OF REACTOR FACILITY QMS PROCEDURES

	Procedure	Scope
NRP 01.	Business Planning	• dovetail with ANSTO policies • objective & KPI setting • budgeting, project funding • strategic & operational plans • financial management
NRP 02.	Management Review	• management system review - effectiveness • facility operational business review
NRP 03.	Process Improvements	• continual improvement • client feedback • internal audit • AOR, OOR, FAA • non conformances o operational occurrences, o abnormal occurrences, o non-conforming product o corrective actions o preventive actions • monitoring effectiveness
NRP 04.	Documentation Management	• preparation, review, approval • revision • controlled copies • electronic access • records management - retention, include archiving
NRP 05.	Records Management	• record retention and archiving
NRP 06.	Operating Organisation	• consistent with SAR Chapter 13 • roles and responsibilities • qualification • fitness for duty • delegations
NRP 07.	Training and Personal Development Management	• consistent with SAR Chapter 13 • training program • accreditation levels • refresher training and reaccreditation • accreditation panel • panel review
NRP 08.	Conduct of Operations	• staffing • authorisation • fitness for duty • periodical updating and review • self assessment • safety culture • operability • licence • OLC compliance • foreign material exclusion • procedural use and adherence • Reactor Assessment Committee • Surveillance, testing • periodical regulatory reporting

	Procedure	**Scope**
		• human factors • approval of experiments • plant safety review & upgrading
NRP 09.	Safety Management	• ANSTO policy • OH&S o WorkCover requirements o Safety Directives • Fire safety o smoke detection, o fire suppression, o combustible material control, o egress, o fire response
NRP 10.	Radiological Safety	• for radiation workers and others • local HP arrangements • local area classification • area radiation monitoring • ALARA compliance • dose reduction
NRP 11.	Configuration Management	• licensing basis • safety reviews and evaluations • design control • modifications • project management • human factors • staged submission • review approval • regulatory interface • document revision • process verification and validation
NRP 12.	Maintenance Management	• work control • post maintenance testing • CMMS • routine surveillance • testing & inspection • preventive & corrective maintenance • Extended shutdown • safe working permits • spares inventory • danger tags • isolations
NRP 13.	Utilisation Management	• facility & systems operations manuals • logs • irradiation approval • programming • monitoring and measurement of products and process • production scheduling
NRP 14.	Core Management	• reactor analysis • criticality
NRP 15.	Nuclear Material Management	• including fuel, control rods, heavy water • receipt • handling

	Procedure	**Scope**
		• inspection • storage & transport • accounting & safeguards reporting • disposal
NRP 16.	Radioactive Source Control	• ANSTO policy • licence • use and inspection • source register • storage • disposal
NRP 17.	Waste Management	• radioactive and other • solid, liquid, gas • limits • sampling • storage • disposal • environmental protection
NRP 18.	Event Response	• ANSTO Response Plan • RRR local control • operator response to anticipated operational occurrences, DBA, BDBA.
NRP 19.	Security Management	• facility security policy • physical protection • access systems • control of visitors
NRP 20.	Organisational Arrangements During Commissioning	• organisational groups • interfaces • roles and responsibilities • lines of reporting and communication

7 APPENDIX 2: PLANS AND ARRANGEMENT EXPECTATIONS CROSS REFERENCE

	Found in Existing Documentation
ACCOUNTABILITY OF APPLICANT *The Licence Holder or Applicant is responsible for maintaining control over all aspects of conducts and dealings for which licences are held or sought, and for ensuring compliance with all applicable requirements of the ARPANS Act and Regulations. The Licence Holder or Applicant may authorise people to carry out certain actions and tasks associated with their responsibilities under the Act, but the Licence Holder or Applicant remains ultimately accountable.*	
1.1 Management control over conducts and dealings, that is, ability to ensure safety by directing tasks.	QMS, NRP 06
1.2 Authority to ensure that the resources and arrangements are sufficient to ensure safety of the conducts and dealings, and that they meet the requirements of the licence.	NRP 01, NRP 06
1.3 Authority over users to ensure that only persons authorised under a facility or source licence are permitted to use the controlled facility, controlled apparatus or controlled material.	NRP 13
1.4 Sufficient safety awareness by management of conducts and dealings.	NRP 07, NRP 09
ORGANISATIONAL ARRANGEMENTS *The Licence Holder or Applicant is responsible for ensuring arrangements exist to effectively control technical, administrative and human factors associated with conducts and dealings. The arrangements should provide a clear description of the lines of communication, responsibilities and authorities, functions, duties and competencies required for all such activities.*	
1.5 An organisational structure, showing clear lines of authority and responsibility for all activities, particularly those relating to safety, training, radiation protection, operations, maintenance, modifications, quality management, radioactive waste management, security, emergency planning and emergency preparedness.	SAR Ch. 13 NRP 06
1.6 A communication network from management to staff, and the feedback system to management, showing how it will result in an open exchange of information at and between all levels of the organisation.	NRP 02, NRP 06, NRP 08
1.7 Defined responsibilities and lines of communication with other parts of the organisation and with external organisations, under all operating conditions.	NRP 04
1.8 Appropriate delegations in relation to operational and financial matters.	NRP 01, NRP 06
1.9 Deputising arrangements for key safety personnel in their absence.	NRP 06
1.10 Defined responsibilities and lines of communication relating to the control and supervision of contractors.	NRP 08, NRP 12, SD 1.5
1.11 A description of the precise roles of individual positions, particularly those relating to radiation protection and nuclear safety, as defined in job descriptions, profiles or similar documents.	ABMS, Position Role Profiles NRP 06, NRP 10
1.12 A statement of responsibilities for key safety positions and the required training, accreditation and authorisation	NRP 06, NRP 07

		Found in Existing Documentation
	for individuals to adequately fulfil these positions.	
1.13	Systematic evaluation of staff performance benchmarked against achievable goals.	ABMS, OSRP
1.14	Periodic review of the adequacy of the organisational structure, including staffing and resources related to conducts and dealings.	NRP 02
1.15	Established liaison channels with ARPANSA and other statutory authorities for the purposes of considering, understanding and achieving compliance with the requirements of relevant legislation, licence conditions, and any obligations of Australia under international treaties.	NRP 06, ABMS
MANAGEMENT SYSTEMS *The Licence Holder or Applicant is responsible for ensuring that management systems, consistent with current AS/NZS ISO standards and commensurate with the type of controlled facility, controlled apparatus or controlled material, are developed, implemented and maintained.*		
1.16	Defined and documented policies relating to all conducts and dealings.	APOL, ABMS, QMS
1.17	Documented objectives pertaining to key elements such as radiation protection, safety performance and protection of the environment.	NRP 01 APOL 2.2
1.18	Procedures to ensure that policies are understood, implemented and reviewed at all levels of the organisation.	NRP 02, NRP07
1.19	A procedure for records management and document control.	NRP 04, NRP 05
1.20	Documentary evidence to demonstrate the effectiveness of the management systems and arrangements for identification of non-conformity and the completion of corrective actions in a timely manner.	NRP 02, NRP 03 HIFAR QMS
1.21	A procedure for reviewing authorisation of personnel to undertake conducts and dealings.	NRP 02, NRP 03
1.22	Certification of management system from Standards Australia, NATA, or equivalent.	N/A
RESOURCES *The Licence Holder or Applicant is responsible for ensuring that adequate and appropriate human, financial and material resources are provided to effectively implement the plans and arrangements for radiation protection and nuclear safety and to maintain effective control over conducts and dealings.*		
1.23	Means for identifying safety resource requirements.	NRP 01
1.24	A process for the allocation of safety-related resources, including planning and evaluation.	NRP 01
1.25	A sufficient number of competent and authorised safety and operational personnel to perform allocated tasks without undue haste or pressure.	NRP 01, NRP 06, NRP 08
1.26	Sufficient funding to ensure staff have available to them the necessary training, equipment, facilities and technical infrastructure.	NRP 01

	Found in Existing Documentation
1.27 Clear requirements and delegations for the purchase of items and services related to the safety of conducts and dealings.	NRP 06

NOTE: ABMS – ANSTO Business Management System QMS – Reactor Facility Quality Management System NRP XX – A procedure of QMS.

8 APPENDIX 3: REQUIREMENTS CROSS REFERENCE

Standard Facility Licence Conditions	AS/NZS 9001 Requirements	ISO 14001 Requirements	ANSTO ABMS/Reactor Facility QMS
1. Purpose of the Licensed Conduct	5.3 Quality Policy 5.4.1 Quality Objectives 5.4.2 Quality management system planning	4.2 EM Policy 4.3.1 EM aspects 4.3.2 Legal and other req. 4.3.3 Objectives and Targets 4.3.4 EM programs	QMS Policy, Business Planning (NRP 01)
2. Purpose of the Licensed Dealings	5.3 Quality Policy 5.4.1 Quality Objectives 5.4.2 Quality management system planning	4.2 EM Policy 4.3.1 EM aspects 4.3.2 Legal and other req. 4.3.3 Objectives and Targets 4.3.4 EM programs	Business Planning (NRP 01)
EFFECTIVE CONTROL ARRANGEMENTS			
3. Maintaining Effective Control			QMS
4. Operating Organisation	5.5.1 Responsibility and Authority 5.5.2 Management Representative 6.1 Provision of resources 6.2 Human Resources 6.3 Infrastructure 6.4 Work Environment 5.5.3 Internal communication	4.4.1 Structure & Responsibility 4.4.3 Communication	Operating Organisation (NRP 06)
5. Personnel Training	6.2.2 Competence, awareness & training	4.4.2 Training, awareness & competence	Training and Personal Development Management (NRP 07)
6. Operator Accreditation	6.2.2 Competence, awareness & training	4.4.2 Training, awareness & competence	Training and Personal Development Management (NRP 07)
7. Personnel Authorisation	6.2.2 Competence, awareness & training	4.4.2 Training, awareness & competence	Training and Personal Development Management (NRP 07)
8. Personnel Fitness for Duty	6.2.2 Competence, awareness &	4.4.2 Training, awareness &	Conduct of Operation (NRP 08)

Standard Facility Licence Conditions	AS/NZS 9001 Requirements	ISO 14001 Requirements	ANSTO ABMS/Reactor Facility QMS
	training	competence	
9. Quality Assurance	Facility QMS modelled and certified to ISO 9001 (4., 4.1, 4.2, 4.2.1, 5.1, 5.2)	Facility QMS addressing ISO 14001 requirements	QMS Policy
SAFETY MANAGEMENT ARRANGEMENTS			
10. Organisational Plans and Arrangements	5.4.1 Quality Objectives 5.4.2 Quality management system planning 4.2.2 Quality Manual	4.3.3 Objectives and Targets 4.3.4 EM programs	Safety Management (NRP 09), Radiological Safety (NRP 10)
11. Index of Documents	4.2.3 Control of Documents	4.4.4 EMS Documentation 4.4.5 Document control	Documentation Management (NRP 04)
12. Safety Approval			Configuration Management (NRP 11)
13. Ongoing Review And Upgrading			Management Review (NRP 02), Process Improvement (NRP 03)
14. Maintenance, Periodic Testing And Inspection	7.6 Control of Monitoring & Measurement Devices	4.5.1 Monitoring & Measurement	Maintenance Management (NRP 12)
15. Inventory of Sources	7.5.3 Identification and Traceability		Radioactive Source Control (NRP 16)
CHANGES TO CONTROLLED ITEMS			
16. Inform the CEO of Transfer etc			Configuration Management (NRP 11), Radioactive Source Control (NRP 16)
17. Ultimate Disposal or Transfer Arrangements			Nuclear Material Management (NRP 15), Radioactive Source Control (NRP 16), Waste Management (NRP 17)
ABNORMAL OCCURRENCES, INCIDENTS AND ACCIDENTS			

Standard Facility Licence Conditions	AS/NZS 9001 Requirements	ISO 14001 Requirements	ANSTO ABMS/Reactor Facility QMS
18. Abnormal Occurrences, Incidents And Accidents	8.5.2 Corrective Action 8.5.3 Preventative Action	4.5.2 Non-conformance & corrective & preventative action	Process Improvement (NRP 03)
19. Reporting Of Abnormal Occurrences, Incidents And Accidents	8.3 Control of nonconforming product	4.5.2 Non-conformance & corrective & preventative action	Records Management (NRP 05)
RECORDS			
20. Record Keeping Arrangements	4.2.4 Control of Records	4.5.3 Records	Records Management (NRP 05)
21. Provision of Records to CEO			Records Management (NRP 05)
REPORTING			
22. Periodic Reporting to CEO			Records Management (NRP 05)
23. Annual Reporting to the CEO			Records Management (NRP 05)
MODIFICATIONS AND RELEVANT CHANGES	7.3 DESIGN AND DEVELOPMENT (7.3.1 ---> 7.3.7)		
24. Categorisation System	7.3.4 Design and Development Review		Configuration Management (NRP 11)
25. Adequate Review	7.3.4 Design and Development Review		Configuration Management (NRP 11)
26. Safety Approval	7.3.4 Design and Development Review		Configuration Management (NRP 11)
27. Reporting of Proposals to the CEO			Configuration Management (NRP 11)
28. CEO's Approval of Proposals for Relevant Change			Configuration Management (NRP 11)
29. Reporting of Relevant Changes			Records Management (NRP 05)
RADIATION PROTECTION ARRANGEMENTS			

Standard Facility Licence Conditions	AS/NZS 9001 Requirements	ISO 14001 Requirements	ANSTO ABMS/Reactor Facility QMS
30. Radiation Protection of Employees and Others			Radiological Safety (NRP 10)
31. Radiation Protection Standards			Radiological Safety (NRP 10)
32. Dose Limits			Radiological Safety (NRP 10)
33. Dose Constraints			Radiological Safety (NRP 10)
34. ALARA			Radiological Safety (NRP 10)
DESIGN AND SAFETY ANALYSIS			
35. Design Information			Configuration Management (NRP 11)
36. Safety Analysis Report			Configuration Management (NRP 11)
37. Revising and Updating the SAR			Configuration Management (NRP 11)
OPERATIONAL LIMITS AND CONDITIONS			
38. Setting Operational Limits and Conditions			Conduct of Operation (NRP 08)
39. Compliance with the Operational Limits and Conditions	8.2.3 Monitoring and Measurement of processes		Conduct of Operation (NRP 08)
40. Amendment to the Operational Limits and Conditions			Configuration Management (NRP 11)
OPERATING ARRANGEMENTS	7. PRODUCT REALIZATION (7.1 Planning of product realization)		
41. Operating Procedures for the controlled facility	7.5.1 Control of production and service provision 7.5.2 Validation of process	4.4.6 Operational Control	QMS, Systems Operating & User Manuals

Standard Facility Licence Conditions	AS/NZS 9001 Requirements	ISO 14001 Requirements	ANSTO ABMS/Reactor Facility QMS
42. Operating Procedures to Comply with Operational Limits and Conditions	7.5.1 Control of production and service provision	4.4.6 Operational Control	Conduct of Operations (NRP 08)
43. Revising and Updating the Facility Operating Procedures	4.2 .3 Control of Documents	4.4.6 Operational Control	Process Improvements (NRP 03)
44. Procedures etc for Controlled Material And Controlled Apparatus	7.5.3 Identification and Traceability	4.4.6 Operational Control	Conduct of Operations (NRP 08)
45. Revising and Updating the Procedures for Controlled Material and Controlled Apparatus	4.2.3 Control of Documents	4.4.6 Operational Control	Process Improvements (NRP 03)
TRANSPORT ARRANGEMENTS			
46. Off-site Transport Of controlled material			SD 5.6 NWP 9.6.2, 9.8.2, 9.8.5, NFP 9.7 (WOTD)
47. On-site Transport of controlled material			SD 5.6 NWP 9.8.2, 9.8.5, NFP 9.7 (WOTD)
RADIOACTIVE WASTE ARRANGEMENTS			
48. Radioactive Waste Management Arrangements		4.5.1 Monitoring & Measurement	Waste Management (NRP 17)
49. Radioactive Waste Discharge Authorisation			APOL 2.2, SD 5.7 HOR-P-09.5.01(S&RS), NWP 9.7 (WOTD)
SECURITY ARRANGEMENTS			
50. Security Arrangements			Security Management (NRP 19)
51. Amendment of Security Arrangements			Security Management (NRP 19)

Standard Facility Licence Conditions	AS/NZS 9001 Requirements	ISO 14001 Requirements	ANSTO ABMS/Reactor Facility QMS
EMERGENCY ARRANGEMENTS			
52 Emergency Arrangements		4.4.7 Emergency preparedness and response	Event Response (NRP 18)
53. Arrangements for Accident Management		4.4.7 Emergency preparedness and response	Event Response (NRP 18)
DECOMMISSIONING ARRANGEMENTS			
54. Decommissioning Plan			SAR 19
55. Arrangements to Facilitate Decommissioning			SAR 19
	5.6 Management Review	4.6 Management Review	Management Review (NRP 02)
	7.2 Customer-related processes (7.2.1 --> 7.2.3)		Utilisation Management (NRP 13)
	7.4 PURCHASING (7.4.1 ----> 7.4.3)		ABMS
	7.5.4 Customer Property		
	7.5.5 Preservation of Product		
	8. MEASUREMENT, ANALYSIS AND IMPROVEMENT	4.5 CHECKING AND CORRECTIVE ACTION	Process Improvements (NRP 03)
	8.2.1 Customer satisfaction		Process Improvements (NRP 03)
	8.2.2 Internal Audit	4.5.4 EMS System Audit	Process Improvements (NRP 03)
	8.2.3 Monitoring and Measurement of processes	4.5.1 Monitoring & Measurement	Process Improvements (NRP 03)
	8.2.4 Monitoring and Measurement of product	4.5.1 Monitoring and Measurement 4.5.2 Non-conformance & corrective & preventative action	Process Improvements (NRP 03)
	8.3 Control of nonconforming product	4.5.2 Non-conformance & corrective &	Process Improvements (NRP 03)

Standard Facility Licence Conditions	AS/NZS 9001 Requirements	ISO 14001 Requirements	ANSTO ABMS/Reactor Facility QMS
		preventative action	
	8.4 Analysis of Data	4.5.2 Non-conformance & corrective & preventative action	Process Improvements (NRP 03)
	8.5.1 Continual Improvement	4.5.2 Non-conformance & corrective & preventative action	Process Improvements (NRP 03)
	8.5.2 Corrective Action	4.5.2 Non-conformance & corrective & preventative action	Process Improvements (NRP 03)
	8.5.3 Preventive Action	4.5.2 Non-conformance & corrective & preventative action	Process Improvements (NRP 03)