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Interim Waste Store Operating Licence Application
Document IWS-O-LA-COM

INTERIM WASTE STORE OPERATING LICENCE ARRANGEMENTS FOR COMMISSIONING

(Rev. 0)


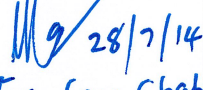
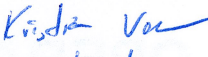

**Prepared By
Australian Nuclear Science and Technology Organisation**

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Interim Waste Store Operating Licence - Commissioning Arrangements

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1 PURPOSE AND SCOPE

The purpose of this document is to describe the commissioning arrangements that are in place for the Interim Waste Store (IWS) built at Lucas Heights Science and Technology Centre (LHSTC). This document is a part of the Operating Licence Application prepared in accordance with the ARPANS legislation [1, 22] and the ANSTO business arrangements. It specifically covers the issues referred to in the ARPANSA Nuclear Installation licence application form listing matters for authorisation to operate a controlled facility.

This Plan should be read in conjunction with the other plans and supporting documents comprising the Operating Licence Application, specifically, IWS-O-LA-SAR *Safety Analysis Report*.

2 SYSTEMS TO BE COMMISSIONED

There are no equipment or plant items that perform process operation or activities in the store. The store houses the intermediate level radioactive wastes in shielded packages. However, the store has the following systems and services that are to be tested and commissioned:

- (a) *Building crane*
- (b) *Inter-lid pressure monitoring system (TN81),*
- (c) *Helium gas pipework (TN81);*
- (d) *radiation alarm*
- (e) *fire alarm*
- (f) *ventilation alarm,*
- (g) *occupancy sensors*
- (h) *lighting and electrical systems*
- (i) *drainage system,*
- (j) *security devices- CCTV*

There are no systems/items in the IWS that require hot commission (i.e. active commissioning). The use of sealed radioactive sources to commission the gamma radiation monitor in the IWS is considered cold commissioning because, the sealed source to be used for this purpose is already licenced under ANSTO Source Licence.

3 COMMISSIONING ARRANGEMENTS

3.1 TN81 transport/storage container

The TN 81 storage package is designed to be maintenance-free. It is a passive system and there are no moving parts with the package. The package is equipped with continuous monitoring of the inter-lid gas pressure using three pressure sensors to ensure that in the event of a fault with one of the sensors, there is sufficient time available to replace/restore the sensors and undertake the leak-tightness of the package.

The only maintenance procedures required are visual inspections (and possible touch-up work on the paint), calibration of the overpressure system and periodic refilling of the pressurized tank with helium [3]. The manufacture of the TN81 Transport/Storage container is being undertaken under the strictest quality assurance and third party oversight.

3.2 Inter-lid pressure monitoring system

The inter-lid gas monitoring equipment is supplied by AREVA. The device will be delivered to ANSTO after it is thoroughly tested and commissioned by AREVA. Upon arrival of the TN81 container at Lucas Heights, ANSTO will install the device on the secondary lid. The installation procedure of the monitoring system is described in the Instruction Manual Provided by AREVA [4].

After installation, the commissioning of the system involves checking whether the signals from three pressure sensors represent the gas pressure in the inter-lid space and they are displayed on the monitor accurately.

3.3 Helium gas pipework

The pipework will be visually checked for any defects after installation. The pipework will be cleaned internally using compressed air. Pressure test of the pipework will be carried out and the test result will be approved the Piped Gas System Approval Officer (PGSAO)

3.4 Radiation alarm

Calibration and test sources will be required to commission fixed radiation monitor(s) in the IWS. These sources will be owned and controlled by ANSTO.

The exact type and size of the sealed sources for the above commissioning work will be decided in consultation with the RPA. The handling of the check sources will be by a suitably qualified person.

3.5 Fire alarm

The commissioning of fire detectors, fire instrument panels will be undertaken by the contractor using expertise and staff from ANSTO. These services will be provided by suitable qualified practitioners who are either ANSTO staff or reputable contractors.

3.6 Ventilation alarm

The commissioning of ventilation system alarm will be undertaken by the contractor using expertise and staff from ANSTO. These services will be provided by suitable qualified practitioners who are either ANSTO staff or reputable contractors

3.7 Occupancy sensors

The commissioning of occupancy sensor(s) involves checking whether the roof mounted ventilation fans are activated when there is an occupancy in the building. ANSTO Site Services Engineer (Electrical) and the contractor will check if these sensors are installed properly and confirm its functionality.

3.8 Lighting and electrical systems

ANSTO Site Services Engineer (Electrical) staff and the contractor will check the relevant wiring, distribution boards, switchboards, lights etc. and ensure these are installed correctly as per the design requirements. It will be confirmed all lights are working.

3.9 Drainage system

The commissioning of building drainage system will be undertaken by the contractor using expertise and staff from ANSTO Support Services group and Waste Operations. These services will be provided by suitable qualified plumbers who are either ANSTO staff or reputable contractors. The testing of the system will ensure that the any liquid from the IWS floor is drained to the site-wide B-line.

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3.10 Building crane

The building crane will be procured from a reputable supplier and it will be a 140 t DGR (Dangerous Goods Rated) crane. The total capacity is 175 Tonne which is 25% more than the design load that it would lift in the IWS. ANSTO Lifting Equipment Approval Officer (LEAO) reviewed the crane design and approved it. The crane will be commissioned in accordance with the plan provided by the crane supplier/manufacture and approved by the ANSTO LEAO. The following major testing and commissioning activities will be performed:

- (a) Crane load capacity test including crane deflection test;
- (b) Overload protection (i.e. overload safety setting);
- (c) Hoist upper and lower work limit
- (d) Long and cross travel limit
- (e) Hoist, long and cross travel speeds

Visual inspection of the crane for any transport or installation damage will be undertaken. Other aspects of the crane such as, hand rail and ladders, service platform, sign and labels, lubrication points will be checked. The pendant height and its function tests will be undertaken.

3.11 Security devices- CCTV

The security devices (CCTV) are procured from a reputable supplier/contractor. The system will be commissioned by the contractor using expertise from ANSTO Security and Safeguards team and also from the ANSTO Support Services group.

4 TESTING AND COMMISSIONING CRITERIA

The activities for the commissioning are listed below.

Item	Commissioning activities	Success criteria	Witnesses
Shielding-TN81 transport/storage container	Perform visual inspection of the TN81 transport/storage container. Perform HP survey	Confirm visually there are no obvious damages to the TN81 container. Confirm the HP survey results are acceptable.	Project Engineer WO facility officer RPA
Shielding-Technological waste drums (cemented waste-CBFC-2 package)	Perform visual inspection of the CBFC-2 package. Perform HP survey.	Confirm visually there are no obvious damages to the waste packages and the ISO container. Confirm the HP survey results are acceptable.	Project Engineer WO facility officer RPA
Area Gamma Monitoring	Review calibration records. Generate audio-visual alarms using sealed source (and, as necessary, alteration of the alarm level).	Confirm instruments in calibration. Confirm functional requirements.	RPA WO facility officer
Ventilation Indication and Alarms	Generate audible alarm by manipulation of ventilation conditions or alteration of alarm set-points.	Confirm local audible alarms when conditions deviate from normal. Confirm alarms are sent	HVAC Engineer WO facility officer

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Item	Commissioning activities	Success criteria	Witnesses
	Also, check that alarms are indicated at the ANSTO Control Centre.	to the SSC.	
Fire Detection and Alarms	Check individual detectors. Generate alarms and emergency signals and confirm that the fire alarm is indicated at the ANSTO Control Centre.	Confirm functional requirements. Confirm alarms are sent to the SSC.	Project Engineer WO facility officer
Fire Hose Reels and Extinguishers	Check that extinguisher and hose reel inspections are up to date.	Confirm functional requirements	Project Engineer WO facility officer
Inter-lid pressure monitoring system,	Check visually that there are no damages to the monitoring equipment and it is installed as per AREVA's instruction . Check all three readings are displayed on the monitoring unit.	Confirm pressure sensors are working. Confirm the inter-lid pressure readings displayed on the monitor are acceptable.	Project Engineer WO facility officer
Helium gas pipework;	Check the pipework visually. Undertake pressure test of the pipework.	Confirm no visual defects/damages to the pipework. Confirm the pressure test results are acceptable.	PGSAO. WO facility officer
occupancy sensors	Check the sensor is installed correctly and it is working	Confirm that it activates the roof mounted fans when there is an occupancy in the store	ANSTO Site Services Engineer (Electrical). Project Engineer. WO facility officer
Lighting and electrical systems	Check the switchboards, distribution boards lights are installed correctly as per the design requirements.	Confirm all lights are working.	ANSTO Site Services Engineer (Electrical). Project Engineer. WO facility officer
Drainage system,	Check the B-line pipework installed correctly	Confirm it drains to B-line.	ANSTO Site Services Staff (Plumbing). Project Engineer. WO facility officer
Building crane	Check the lifting capacity and speed, travel speed, Overtravel protection, area of coverage, braking function, safety functions	Confirm all the parameters meet the design requirements.	ANSTO LEAO. WO facility officer.

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Item	Commissioning activities	Success criteria	Witnesses
	i.e., alarms/indications/emergency stops,	Confirm all the safety functions are working satisfactorily. Witness the factory acceptance test results.	
security devices	Check the security devices, i.e. CCTVs are installed correctly and they are working as per design.	Confirm all devices are functioning as per the design requirements.	ANSTO Security and Safeguards WO facility officer

5 CONCLUSION

For the TN81 transport/storage container, it is a certified Type B(U) package under the IAEA regulation [5] for transport and storage and tests were conducted during design phase.

Also, the technological wastes are packaged in an ISO container as IP2 package. The ISO container is tested and certified as a transport package under the IAEA regulation [5]. The production and testing of the technological waste and is carried out in accordance with AREVA Quality Assurance Program.

For other items with (i.e. safety Category 3 items) [6], the suppliers will provide acceptance testing protocols for basic operational commissioning of the equipment subject to review and approval by the project team. Some items will initially be subject to factory acceptance tests. These tests will be supplemented by appropriate commissioning procedures which will be reviewed and approved by the project.

The commissioning of fire detectors, fire instrument panels and ventilation system alarm will be undertaken by the contractor using expertise and staff from ANSTO. These services will be provided by suitable qualified practitioners who are either ANSTO staff or reputable contractors. Upon completion of the testing and commissioning of the IWS building services, a commissioning report will be prepared.

6 REFERENCES

- 1 Australian Radiation Protection and Nuclear Safety (ARPANS) Act 1998.
- 2 Australian Radiation Protection and Nuclear Safety (ARPANS) Regulations 1999.
- 3 AREVA TNI, Storage Safety Analysis Report TN81 – Radiation Protection, Chapter 10, DOS-13-00089962-900, Rev. 00, June 2014.
- 4 AREVA TNI, TN81 Instruction Manual, (CSD-V, CSD-U, CSD-B, CSD-B + CSD-V), Item s, Specification for Interim Storage, EXP-13-00096013-003-E Rev. 01, May 2014.
- 5 International Atomic Energy Agency (IAEA), Regulations for Safe Transport of Radioactive Material, 2009 Edition, IAEA Safety Requirement No. TS-R-1, Vienna 2009.
- 6 IWS Safety Analysis Report. IWS-O-LA-SAR.