Eskom	ADMINISTRATIVE PROCEDURE	Allocation Centre 38A	Reference Number KAA-634	Rev 12
NNR: NO No.:	RESPONSIBILITIES FOR THE RADIOACTIVE MATERIAL AND RADIOACTIVE WASTE CONTROL PROGRAMME			PAGE 1

KORC	ACCESS	IMPORTANCE CATEGORY	NEXT REVIEW DATE	DATE AUTHORISED
NO	Nuclear Restricted	NSA	2023-05-27	2020-05-27

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N CIBI	R TRIMM	T KARSTEN
SENIOR SUPERVISOR RADIATION PROTECTION	RADIATION PROTECTION OPERATIONS MANAGER	RADIATION PROTECTION MANAGER
DATE 2020-05-27	**DATE** 2020-05-27	**DATE** 2020-05-27

THIS PROCEDURE HAS BEEN SEEN AND ACCEPTED BY:

D de Villiers	Document Custodian
N Mokoto	Senior Licensing Physicist
U Philander	Radwaste Supervisor
P Kwinana	Radiation Protection Development Manager
B de Waal	Senior Supervisor Radiation Protection
G Hemy	Senior Radiation Protection Assistant
JB Groenewald	ALARA Co-ordinator
S Fisa	Maintenance Manager
G Visser	Chemistry
E Kemp	OPG
T Mabelane	RP Physicist
R Goldstein	Design Engineering Manager
J Bele	Quality Assurance Manager
P Lewis	Senior Supervisor Radiation Protection Training

FCA	ALARA REVIEW	SUPERSEDES
PROTECTION	YES 2020-04-03	KAA-634, Rev 11 dd. 2020-01-29 FULL REVIEW

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1.0 PURPOSE

1.1 To describe the responsibilities of the different groups involved in radioactive material and radioactive waste control.

1.2 To describe the process for controlling radioactive material.

2.0 SCOPE

2.1 Applicable to all materials that can be regarded as radioactive.

2.2 Applicable to the classification of radioactive material, including radioactive waste.

2.3 Applicable to the management of radioactive waste.

2.4 Not applicable to the control of radioactive sources, radiography equipment, nuclear fuel or effluent discharges.

3.0 DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

3.1.1 **A Radiation Protection Work Instruction** – Is administered in terms of - KAH-014.

3.1.2 **A Trefoil** – Is the internationally accepted symbol that denotes radioactivity.

3.1.3 **High Active Radioactive Material** – Has a contact doserate greater than or equal to 2 mSv/h.

3.1.4 **Integrity Container Check** – Is to verify an absence of breaches that can lead to non-fixed contamination loss or ingress of water.

3.1.5 **Low Active Radioactive Material** – Has a contact doserate less than 2 mSv/h.

3.1.6 **On-site Containers** – Is a freight container used for the safe transportation and storage of Radioactive equipment/goods on the premises.

3.1.7 **Radioactive Material** – Is any material with surface contamination that exceeds the limit specified in 238-36 for tools and equipment or any volume contaminated material with specific activity levels exceeding those specified in 238-54.

3.1.8 **Radioactive Waste** – Material, whatever its physical form, remaining from practices or interventions and for which no further use is foreseen, that contains or is contaminated with radioactive substances

3.1.9 **Surface Contamination** – The presence of fixed or non-fixed radioactive substance on a surface in quantities in excess of the limits specified.

3.1.10 **Temporary On-site Containers** – Is a freight container used by vendors to transport Radioactive equipment/goods to and from the premises and do not reside permanently on the site.

3.1.11 **Volume Contaminated Material** – Contains a limited amount of activity distributed throughout the volume of the material. The material can be either solid or liquid.

3.1.12 **WearCheck** – Is a process where a sample of oil is used to determine component wear.

3.2 Abbreviations

3.2.1 **ALARA** – As Low As Reasonably Achievable

3.2.2 **CRONOS-4** – Small Items Monitor

3.2.3 **CSB** – Cask Storage Building

3.2.4 **CZ** – Controlled Zone

3.2.5 **DWS** – Decontamination Work Shop

3.2.6 **ETY** – Containment Atmosphere Control Ventilation System

3.2.7 **IAEA** – International Atomic Energy Agency

3.2.8 **ISOCS** – In Situ Object Counting System

3.2.9 **LLW** – Low Level Waste

3.2.10 **NAB** – Nuclear Auxiliary Building

3.2.11 **NNR** – National Nuclear Regulator

3.2.12 **NRWDI** – National Radwaste Disposal Institute

3.2.13 **PPE** – Personnel Protective Clothing

3.2.14 **PQE** – Procurement Quality Engineering

3.2.15 **PTR** – Reactor Cavity and Spent Fuel Pit Cooling System

3.2.16 **RP** – Radiation Protection

3.2.17 **RPC** – Radiation Protection Certificate

3.2.18 **SDE** – Systems Design Engineering

3.2.19 **SOP** – Step Off Pad

3.2.20 **SRPA** – Senior Radiation Protection Assistant

4.0 REFERENCES

4.1 Referenced Documents

4.1.1 238-51, Rev 0a: Radioactive Waste Management

4.1.2 240-127002040, Rev 1: Guide to Determine Quality Programme Monitoring and Verification Requirements

4.1.3 335-2, Rev 5: Koeberg Nuclear Power Station Management Manual

4.1.4 KAA-500, Rev 13: The Process for Controlled Documents

4.1.5 KAB-032, Rev 6: Operations Support Group Organisation

4.1.6 KSA-011, Rev 14: The Requirements for Controlled Documents

4.1.7 KSB-005, Rev 13a: Operating Standards and Expectations

4.1.8 KSH-008, Rev 10: Radiation Protection Records, Data and Information Management

4.1.9 KSH-010, Rev 8: Functional Responsibilities for Radiation Protection at Koeberg Operating Unit

4.1.10 KWU-DE-023, Rev 0: Visual Inspection of TES Waste Disposal of Concrete Drums

4.1.11 NNR Regulation: R.388 Safety Standards and Regulatory Practices (SRRP)

4.2 Applicable Documents

4.2.1 238-36: Operational Radiation Protection Requirements

4.2.2 238-54: Radiological Protection Licensing Requirements for Koeberg Nuclear Power Station

4.2.3 IAEA SSR- 6: Regulations for Safe Transport of Radioactive Material

4.2.4 KAA-632: ALARA Programme

4.2.5 KAH-002: Radiation Surveillance Programme

4.2.6 KAH-014: Shift Activities, Handover and Coverage of Radiation Protection Shift Vacancies

4.2.7 KFH-HP-025: Reception of Radioactive Material

4.2.8 KGH-006: Radiation Protection Decontamination Techniques and Area Preparation

4.2.9 KWH-I-074: Gamma Spectrometry with Genie 2000 and ISOCS

4.2.10 KWH-I-091: Operation, Use and Calibration of the Cronos-4

4.2.11 KWH-S-001: Radiation and Surface Contamination Surveys

4.2.12 KWH-S-033: Processing and Administration of Solid Radwaste

4.2.13 KWH-S-037: Classification of Solid Radioactive Materials and the Acceptable On and Off-Site Packaging Requirements for such Materials

4.2.14 KWH-S-047: Implementation of the Radioactive Material Control Programme

4.2.15 VLP-WAC-001: Vaalputs Waste Acceptance Criteria

5.0 RESPONSIBILITIES

5.1 Radiation Protection (RP) Manager

5.1.1 Develops the radioactive material and radioactive waste management programme.

5.1.2 The RP Manager and/or his/her designee must approve any alternative containment method to prevent the spread of contamination or spillage of radioactive liquid during the transfer of radioactive equipment, which is not according to the methods approved to prevent the spread of contamination during the transfer of radioactive equipment transfer as described in procedure (KWH-S-047).

5.1.3 Authorises radioactive material or waste storage areas in addition to those specified in this procedure.

5.1.4 Approves the quarterly report, compiled from the consolidated information, to NNR.

5.2 RP Operations Manager

5.2.1 Administers and ensures implementation of the radioactive material and radwaste management programme.

5.2.2 Consolidates information from Radwaste, Operating and adds Radiation Protection information for quarterly report to the NNR.

5.2.3 Specifies radioactive material or waste storage areas in addition to those specified in this procedure.

5.3 RP Development Manager

5.3.1 Verifies and ensures the transport of radioactive material and/or disposal of radioactive waste comply with the relevant regulations (Regulations for Safe Transport of Radioactive Material and Vaalputs Waste Acceptance Criteria).

5.3.2 Ensures that staff performing functions in accordance with this procedure, are authorised in their respective sections.

5.3.3 Reviews the quarterly report, compiled from the consolidated information, to NNR.

5.4 RP Senior Supervisors

5.4.1 Implements the radioactive material and radwaste control programme.

5.4.2 Ensures that surveys are performed to identify radioactive material.

5.4.3 Ensures that surveys are performed in the different storage areas.

5.4.4 Ensures that staff performing functions in accordance with this procedure, are adequately trained and authorised in their respective sections.

5.4.5 Provides and ensures adequate oversight and verification of tracking mechanisms, where applicable.

5.4.6 Reviews unconditional releases and clearance of radioactive material from the radiological controlled zones for their respective sections as oversight to ensure compliance.

5.4.7 Reviews all documentation generated in their section in relation to this procedure prior to submissions.

5.5 RP Plant Shifts Specific

5.5.1 Establishes and maintains a list of all contaminated and potentially contaminated areas in the Nuclear Auxiliary buildings, Fuel Buildings, Electrical buildings and Turbine hall.

5.6 RP Plant Days Specific

5.6.1 Ensures the tracking of the receipt and shipment of radioactive material or radioactive waste from site.

5.6.2 Maintains an inventory of radioactive material / equipment stored in transport containers on site.

5.6.3 Completes all relevant dangerous goods declarations for the shipment of radioactive material and waste.

5.6.4 Provides survey information of the radioactive waste for Radwaste Tracking Program.

5.6.5 Establishes and maintains a list of all contaminated and potentially contaminated areas on site, except those covered by RP Plant Shifts.

5.7 Radwaste Management Specific

5.7.1 Administers and controls all aspects pertaining to the processing and storage of operational radioactive waste (concrete and steel) on-site.

5.7.2 Administers the transport of operational radioactive waste to the disposal site.

5.7.3 Ensures adequate supplies of steel and concrete drums for processing of radioactive waste.

5.7.4 Maintains an accounting and tracking system for the storage and tracking of radioactive waste on-site and off-site.

5.7.5 Controls the inventory of operational radwaste:

5.7.5.1 Assign Koeberg drum numbers to all waste drums.

5.7.5.2 Ensures the inventory of all waste drums is correctly reflected on the drum labels and in the Radwaste Tracking Program.

5.7.5.3 Keeps track of the total amount change out of resin beds and filters.

5.7.5.4 Updates the drum inventory to the Radwaste Tracking Program.

5.8 Senior Physicist/Engineer/AP

5.8.1 Reviews and authorises shipment packages to ensure that the transport of radioactive material (to or from site) and the transport and disposal of radioactive waste complies with the relevant regulations. (Regulations for Safe Transport of Radioactive Material and Vaalputs Waste Acceptance Criteria).

5.9 Radiation Protection Monitor

5.9.1 Implements Radiation Protection controls at radioactive material exit / entry points.

5.9.2 Identifies radioactive material during surveillance at all plant locations.

5.9.3 Surveys contaminated equipment / material for unconditional release or clearance and transfer purposes.

5.9.4 Identifies material with specific analysis requirements (e.g. volume contaminated material) for unconditional release/clearance and ensures that such analysis is performed, interpreted and documented.

5.9.5 Completes the labels and signposting on material and equipment for storage, transfer and unconditional release or clearance.

5.9.6 Ensures that Radiation Protection controls are applied during the transfer of low and high active radioactive material.

5.10 Radiation Protection Escort

5.10.1 Ensures that radiological controls are applied when radioactive material is transferred between controlled zones, up to radiation levels for which he has been authorised.

5.10.2 Reacts to spillages of radioactive material during transport.

5.10.3 Tears off and discard section C of the transfer certificate after the equipment entered its designated controlled zone.

5.10.4 On arrival of container at destination, tears off and forward section B of the container transfer certificate to the SRPA Days during normal office hours or to the Duty SRPA after hours.

5.10.5 Performs this function in accordance with KWH-S-047 as it relates to container movement.

5.11 Radiation Protection Surveyor

5.11.1 Surveys and escorts radioactive material up to radiation levels that for which he has been authorised in accordance with KGH-006.

5.12 Chemistry

5.12.1 Provide applicable chemistry sample reports and the mean activity reports for input to the Radwaste Tracking Program.

5.13 Design Engineering

5.13.1 Retain overall responsibility as it relates to the design, construction and testing of packages used for operational radioactive waste.

5.13.2 Ensure that operational radioactive waste packages are designed constructed and tested in accordance with relevant design specifications and procedures as well as IAEA transport regulations and Vaalputs waste acceptance criteria.

5.13.3 Ensure that all relevant stakeholders are involved at all stages of the design, construction and testing of operational radioactive waste packages, including but not limited to PQE, Radiation Protection, the NNR and the NRWDI.

5.14 Procurement Quality Engineering

5.14.1 Ensure that the quality requirements for the procurement of operational radioactive waste packages are met.

5.15 Responsibilities of Originator for Shipments of Radioactive Material that needs to be shipped Off-site

5.15.1 Provides and pack materials according to RP specifications.

5.15.2 Inform Radiation Protection of the expected date of shipment.

5.15.3 Provide Radiation Protection with the proper name and address of the consignee and all other information that will be required by Radiation Protection.

5.15.4 Arrange with the Freight Company for the transportation of shipment.

5.15.5 Inform the receiver about the consignment.

5.15.6 Ensure that radioactive material is sent to a facility that is authorised to handle radioactive material.

5.16 Radworker Responsibilities for Material under his/her Control

5.16.1 Performs work in accordance with Radiation Protection instructions (e.g. RPC) and in compliance with the ALARA principles (KAA-632).

5.16.2 Informs Radiation Protection of material to be taken into a controlled zone and ensures that it complies with RP requirements.

5.16.3 Familiarises himself/herself of the role in reducing the radiological footprint on site as per 5.16.4.

5.16.4 Minimises the production of radioactive waste in accordance with RP and Radwaste instructions by ensuring the following:

5.16.4.1 Removes all unnecessary wrapping and packaging material from materials / equipment before it is taken into the controlled zone,

5.16.4.2 Minimises the material taken into the controlled zone,

5.16.4.3 Reduce/minimises the usage for storing of radioactive material in containers.

5.16.4.4 Keeps non-contaminated items separate of those that are contaminated.

5.16.5 Ensures that all material / equipment under his/her control is:

5.16.5.1 Properly surveyed, contained and wrapped in accordance with RP instructions when transferred between controlled zones or transferred from a contamination zone to a clean zone.

5.16.5.2 Packaged and stored appropriately and marked and labelled according to RP instructions. He / she must complete part A of the Transfer Certificate or the top part of the Controlled Zone Equipment Tag as appropriate and immediately inform Radiation Protection of the equipment.

5.16.5.4 Placed on the non-controlled zone side of the exit control point immediately once surveyed for transfer (a radioactive bag) provided an escort is in attendance or removed immediately from the controlled zone, if equipment / material is **unconditionally released.**

5.16.5.5 Kept on the controlled zone side of the exit point until collected if it is not to be transferred immediately.

5.16.5.6 Correctly disposed of, that which is located in the controlled zone, according to RP and Radwaste instructions.

5.16.6 The Radworker is to ensure the following:

5.16.6.1 She/he surveys personal belongings such as pens, clipboards, PPE and small tools, using the specified instrumentation.

5.16.6.2 Any tools or equipment with fixed contamination levels exceeding 5000 ccpm (L-177) or 90 ccps must be decontaminated before storage in controlled zone tool stores. No smearable contamination is permitted on tools for storage purposes.

5.16.6.3 No Red, Yellow or Green bags with contaminated or potentially contaminated material or clothing may be opened in the tool store or any non-contaminated area.

NOTE: *Returned decontaminated equipment in red bags from the DWS and washed CZ clothing in green bags from the hot laundry, may be opened in a non-contaminated CZ area after consultation with an Authorised RP person.*

5.16.6.4 All tools and equipment must be surveyed for radiation and non-fixed contamination on the contaminated side of the SOP before transfer to the clean side.

NOTE: *Any tool or equipment that is moved over a SOP and not declared clean by swipe and / or smear survey on equipment and that is not dedicated to be moved to and used in another contaminated / SOP area, must be taken to the decon workshop immediately.*

5.16.6.5 Contaminated or potentially contaminated equipment may not be transferred into a container over a SOP without being properly bagged or wrapped. E.g. bulk equipment to be moved into a container at the 0m airlock.

5.16.6.6 Equipment with non-fixed contamination on outer surfaces and with no risk that any internal contamination can spread to the outside may be moved into a container over a SOP provided the container or the equipment is watertight, the pathway to the container is properly laid down with plastic and proper contamination controls are in place. E.g. SOP, barriers and radworkers dressed in correct protective clothing.

5.16.6.7 Cross contamination to slings, trolleys, trailers, trucks, forklifts and other transfer equipment must be considered and must be surveyed after each transfer and on completion of the equipment transfer.

5.16.6.8 Radioactive equipment may only be moved with the permission of the RPM when all the radiation and contamination surveys, counting of smears/swipes and attachments of transfer certificates are completed.

5.16.6.9 Tools and equipment are not allowed to be passed over or under RP barriers other than the SOP area. Only equipment/tools that are too large and /or needs to be rigged may be taken over a barrier with RP's permission and RP barriers to be treated as if invisibly extend from the floor to the ceiling of the area.

5.16.6.10 Tools and equipment should be decontaminated before being stored.

5.16.6.11 An inventory is kept of all radioactive material / equipment stored in transport containers.

5.16.6.12 Removal of any Unconditional Release Certificate attached to equipment / material before re-entry to the controlled zone.

5.16.6.13 Freight containers that are being used for transportation and/or storage of radioactive material are being kept in a good condition to reduce risk of leakage of contamination / radioactive liquids. (See section 6.3; Periodic integrity monitoring).

5.16.6.14 Follows the control and storage of freight containers as per KWH-S-047.

5.16.7 Follows Appendix 3 for oil sampling, transfer and analysis process.

6.0 PROCEDURE

6.1 The radioactive material control programme consists of the following aspects:

6.1.1 Identification of Radioactive Material

6.1.1.1 The routine and special surveillance programme (KAH-002) will identify, classify and determine all areas having a radiological hazard.

6.1.1.2 Radioactive material located and originating in areas having a radiological hazard are identified as part of the surveillance programme.

6.1.1.3 A radiochemical analysis, or other approved method, will quantify volume contaminated material.

6.1.1.4 Radioactive material shall be appropriately contained in accordance with KWH-S-047 requirements.

6.1.1.5 All containers for radioactive material and waste must be marked in a clearly visible location, with at least one trefoil complying with the minimum size specified in KWH-S-033.

6.1.1.6 All radioactive material stored on-site shall be tagged using the relevant tags or certificates.

6.1.1.7 Tagging is not required provided the following conditions are satisfied:

(1) Empty containers that are not contaminated.

(2) The radioactive material is inaccessible and does not pose any radiological risk.

(3) Laundered controlled zone clothing on designated storage racks.

(4) The radioactive material comprises installed plant components.

(5) The radioactive material is under the supervision of an individual qualified to maintain control over it at all times.

(6) The radioactive material is in a radiological control zone and in the process of being prepared for transfer or shipment off-site.

6.1.2 Classification of Radioactive Materials

6.1.2.1 Radioactive material destined for shipment off-site is classified according to procedure KWH-S-037. This classification is in accordance with the IAEA requirements.

6.1.2.2 The different types of radwaste are classified according to KWH-S-033 and KWH-S-047.

6.1.2.3 Radioactive material stored on-site is classified for handling purposes alone as low or high active, according to the definitions in this procedure. The material need not be marked as such.

6.1.3 Storage

6.1.3.1 Designated permanent waste storage locations are: N030, N033, N034, LLW building, Cask Storage Building and container yard in dedicated containers. Any additional or specific storage areas for waste must be approved as per KWH-S-047.

6.1.3.2 Radwaste storage areas must be free from surface contamination, as far as possible.

6.1.3.3 Radioactive material shall be stored in an area with proper radiological controls and will be subject to the controls specified in 6.1.1.

6.1.3.4 The end user must obtain approval to store radwaste and/or radioactive material/equipment from the owner of the storage location.

6.1.4 Accounting

6.1.4.1 Radioactive material and/or equipment received on-site or shipped off-site is administered in accordance with procedure KWH-S-037.

6.1.4.2 All other stored radioactive material will be subject to the identification and storage requirements contained in this procedure.

6.1.5 Reception of Radioactive and / or Contaminated Equipment On-site

6.1.5.1 Only a Senior Authorised Person may authorise the reception of radioactive material on-site.

6.1.5.2 The necessary survey records shall be obtained of shipment packages and contaminated / active equipment prior to reception on-site.

6.1.5.3 Radioactive material received on-site shall be surveyed and handled in accordance with KWH-S-037.

6.1.6 Requirements for Shipment of Radioactive Material Off-site

6.1.6.1 Only a Senior Authorised Person may authorise the shipment of radioactive material off-site.

6.1.6.2 Radioactive material shipped off-site shall be surveyed and handled in accordance with KWH-S-037.

6.1.7 Disposal

6.1.7.1 Non-processed radioactive material (e.g. tools, instruments and equipment) and waste is disposed of in accordance with KWH-S-047. The physical processing of the radwaste and plant processed waste into the final state, fall outside the scope of this procedure.

6.1.8 Transport / Transfer (within and between Controlled Zones), excluding Movement/Transfer of Containers and Containers Temporary On-site

6.1.8.1 Transfers between Controlled Zones shall be planned in advance and communicated with the duty SRPA or Day Shift SRPA. Transfer of RP decontamination equipment, clothing and waste bags shall be planned and communicated with the RP decontamination SRPA.

6.1.8.2 Equipment shall be surveyed by a person authorised to do so when transferred within and between controlled zones.

6.1.8.3 The non-fixed contamination levels on the outside of the package transferred between controlled zones must be non-detectable by smear.

6.1.8.4 The Radiation Protection Transfer Certificate must be completed and attached to material transferred between controlled zones. For the transfer of radioactive waste containers (such as Compacted steel drums and processed Concrete drums) to the LLW, the controls in KWH-S-033 are deemed adequate, and a Transfer Certificate is not required.

6.1.8.5 An RP Monitor or surveyor shall be present when the equipment leaves the controlled zone. The function of this person is to ensure that:

(1) The equipment is surveyed and/or has a completed transfer certificate attached,

(2) Only the equipment surveyed by RP monitor or surveyor leaves the Controlled Zone,

(3) The equipment is escorted by a person authorised to do so and,

(4) The RP controls at the boundary are re-established.

6.1.8.6 Part C of a Transfer Certificate must be removed when equipment enters the designated controlled zone.

6.1.8.7 The Controlled Zone Equipment Tag provides adequate controls for the transfer of equipment, clothing and waste within the same controlled zone.

NOTE: *Part A and B of the transfer certificate will provide the required information of the equipment and no additional Controlled Zone Equipment Tag is required.*

6.1.9 Transfer of Potentially Contaminated Material to and from the Low Background Building (ISOCS)

6.1.9.1 The transport of equipment to and from the ISOCS shall be with the use of a "Transfer of Potentially Contaminated Material to and from Low Background Building" certificate.

6.1.9.2 The option "Origin" shall be used when item is transported to the Low Background Building and the option "Return To" shall be used if the item could not be unconditionally released or cleared and need to be transferred out of the Low Background Building.

6.1.9.3 Once the item had been unconditionally released or cleared, the top part of the Certificate must be torn off and the bottom part must be affixed to the released item as an Unconditional Release Certificate.

6.1.10 Unconditional Release of Equipment / Material other than Personal Belongings

6.1.10.1 No emergency unconditional release surveys shall be performed. Unconditional release surveys shall be performed with advance notice to RP so that adequate manpower can be provided to comply with all requirements.

6.1.10.2 Assessment of equipment to be unconditionally released from the controlled zone shall be done by a person authorised to do so.

6.1.10.3 Unconditional release surveys shall be performed in accordance with KWH-S-047.

6.1.10.4 There shall be no detectable smearable (non-fixed) or fixed surface contamination on any piece of equipment when cleared unconditionally. KWH-S-047 contains the criteria for surveillance and non-detectable levels.

6.1.10.5 The specific activity levels in volume contaminated material shall be below the clearance levels in accordance with KWH-S-047.

6.1.10.6 A Cronos-4 shall be used to monitor equipment that fits in it in accordance with KWH-I-091.

6.1.10.7 When the Cronos-4 is used, the equipment may not be separated into smaller parts to split the activity contribution due to each part.

6.1.10.8 If the Cronos-4 detects radioactivity, the article is regarded as being contaminated.

6.2 Radioactive Material Exit Control Points

NOTE: *These are not radioactive material clearance points.*

6.2.1 The following locations are normal exit points for radioactive material from the controlled zone. Any other specific or additional location shall be approved by the Radiation Protection Senior Supervisor (Plant).

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- NNR Act 47, Section 51, PAIA 38(b).Redacted, a listing of all exit points is provided, which is sensitive information
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6.3 Containers

6.3.1 Reference KWH-S-047 with regards to the definition for a Container.

6.3.2 The controls applicable to the Temporary Storage of Radioactive equipment in transport Containers are captured in KWH-S-047.

6.3.3 The Containers intended for transportation of radioactive material on-site must be of a re-usable, robust containment method and must reduce the risk of leakage of Contamination / Radioactive Liquids.

6.3.4 An inventory must be kept of radioactive material / equipment stored in transport containers and the Snr Supervisor RP Days to be informed of any changes.

6.3.5 Periodic integrity monitoring of on-site containers used for storage of radioactive materials equipments or goods must be done.

(1) Container is watertight: Test method: enter container, close both doors tightly and look for incoming light (e.g. through cracks, holes, door gaskets etc.).

(2) If the above check is not possible due to equipment already inside the container, perform the following checks; Doors are not broken or door is not distorted.

(3) Holes: No obvious holes or tears in the exterior panelling.

6.3.6 Refer to KWH-S-047 in the event that the equipment is potentially contaminated.

6.3.7 Refer to Appendix 1 for Work Flow Responsibility Matrix for On-site Container Movement.

6.3.8 Refer to Appendix 2 for Work Flow Responsibility Matrix for Temporary On-site Container Movement.

7.0 RECORDS

N/A

8.0 ATTACHMENTS

Appendix 1 – Work Flow Responsibility Matrix – On-site Container Movement

Appendix 2 – Work Flow Responsibility Matrix – Movement of Containers On-site (Temporary)

Appendix 3 – Work Flow Responsibility Matrix – WearCheck Oil and Waste Oil Sample Process

Appendix 4 – Work Flow Responsibility Matrix – ISOCS Work Flow Responsibilities

Appendix 5 – Justification

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 1 – ON-SITE CONTAINER MOVEMENT

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	1 LINE GROUP	2 RPM/RPA	3 RP ESCORT	4 SRPA SHIFT	5 SRPA DAY'S	6	7	8	9	10	11	12	NOTES & REFERENCES
A. ON-SITE CONTAINER MOVEMENT CONTROL													
1. Line group requests RP to survey and escort container.	[R]		[S]										KAA-634 KWH-S-047
2. RPM/RPA to survey equipment and complete Transfer Certificate.		[R]											KAA-634 KWH-S-001
3. On arrival at destinations; RP Escort removes Part B from Container Transfer Certificate and forward part B to the SRPA Days.			[R]										KAA-634 KWH-S-047
4. Update container electronic log book.		(R)			[R]								KWH-S-047
5. Update container tracking map.		(R)			[R]								KWH-S-047
6. Movement of containers after hours; Shift SRPA to ensure Part B of container transfer certificate is forwarded to the Day Shift SRPA.				[R]									KWH-S-047
7. A flip log entry of container movement to be made.				[R]									

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 2 – MOVEMENT OF CONTAINERS ON-SITE (TEMPORARY)

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	1 RP MONITOR	2 SRPA DAYS	3 SENIOR AUTHORISE PERSON	4 RP MANAGER	5 LINE GROUP	6 DECON WORKSHOP	7	8	9	10	11	12	NOTES & REFERENCES
A. CONTAINERS COMING ON-SITE													
1. Inform station of shipping requirements.		[R]											KWH-S-037
2. Provide required documentation as per procedure.					[R]								KWH-S-037
3. Authorise shipment to come on-site.		[R]	[A]										KFH-HP-025
4. Perform receival survey of container.	[R]	[A]											
5. Perform Base line survey of container contents.	[R]	[A]											
6. Update container electronic log book		[R]											
B. CONTAINERS GOING OFF-SITE													
1. Decontaminate Equipment.						[R]							
2. Perform survey of equipment after decontamination.	[R]	[A]											KWH-S-037, Appendix 10.
3. Ensure equipment is packed.		[A]			[R]								KWH-S-037, Appendix 9.
4. Perform SCO/LSA calculations.		[R]	[A]										KWH-S-037
5. Review shipment paperwork.			[R]	[A]									
6. Complete IATA Checklist.		[R]											
7. Update container electronic log book		[R]											

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 3 – WEARCHECK OIL AND WASTE OIL SAMPLE PROCESS

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	1 LINE GROUP	2 SRPA DAYS	3 SRPA SHIFT	4 RPA/RPM	5 RADIOCHEMISTRY	6 SHIFT CHEMIST	7	8	9	10	11	12	NOTES & REFERENCES
A. WearCheck oil and waste sample process													
1.1 The oil (a) WearCheck sheets/sheet or (b) information for waste samples are delivered to the day shift SRPA during working hours or to the shift SRPA after hours.	[R]	[I]	[I]	[C]									The priority must be specified.
1.2 Generate Gamma ID work sheets/sheet.		[R]	(R)	(R)									Radpro RP Computerised Survey Programme
1.3 E-mail the gamma work sheet to the Chemistry HOS during normal working hours and confirm receipt telephonically.		[R]			[I]								Either mail to Chemistry HOS, Senior Radiochemistry Assistant or Senior Chemical Analyst.
1.4 E-mail the gamma work sheet to the Chemistry HOS after hours and confirm receipt telephonically.			[R]	[R]	[I]								Either mail to Chemistry HOS, Senior Radiochemistry Assistant or Senior Chemical Analyst.
1.5 In the event that the email facility is not available during normal working hours, the hardcopy of the gamma ID must be delivered to Radiochemistry.		[R]		[S]	[I]								
1.6 An entry of the oil sample must be made in the electronic oil sample logbook.		[R]	(R)										
1.7 In the event that the email facility is not available after hours, the hardcopy of the gamma ID must be delivered to the shift Chemist.		(R)	[R]	(R)									
1.8 Perform the oil sampling of the component using a 40ml container-or a 1 litre container for oil samples.	[R]				[I]	[I]							KWH-S-047
1.9 Ensure that Radiochemistry receives the oil samples during normal working hours.	[R]				[I]								

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 3 – WEARCHECK OIL AND WASTE OIL SAMPLE PROCESS

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	1 LINE GROUP	2 SRPA DAYS	3 SRPA SHIFTS	4 RPA/RPM	5 RADIOCHEMISTRY	6 SHIFT CHEMIST	7	8	9	10	11	12	NOTES & REFERENCES
B. WearCheck oil and waste sample process													
1.1 Ensure that the shift chemist receives oil samples after hours.	[R]					[I]							
1.2 Transfer the oil samples to the Chemistry Hot Lab and count for principle gamma emitters.					[R]	[S]							
1.3 E-mail an electronic copy of the Gamma spectrum analysis report and telephonically confirm receipt of the report.		[I]	[I]		[R]	[S]							Email the report to the Day shift SRPA during normal working hour and to the Duty SRPA after hours.
1.4 Collect a hard copy of the gamma spectrum analysis report from Chemistry.		[R]											
1.5 Update and authorise the oil sample gamma ID's on Radpro.		[R]											
1.6 Evaluate whether the oil sample is releasable or not releasable.		[R]											KWH-S-047
1.7 Update the electronic oil sample log book.		[R]											
1.8 Notify via email and follow up with a telephone call to the relevant owner of the oil sample whether the oil sample is releasable or not releasable.		[R]											

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 3 – WEARCHECK OIL AND WASTE OIL SAMPLE PROCESS

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	1 LINE GROUP	2 SPRA DAYS	3 SRPA SHIFTS	4 RPA/RPM	5 RADIOCHEMISTRY	6 SHIFT CHEMIST	7 FIRE RISK MANAGEMENT	8	9	10	11	12	NOTES & REFERENCES
C. WearCheck oil and waste sample process													
1.1 Ensure that the oil sample is collected from Chemistry if releasable.	[S]	[R]											
1.2 Sign Chemistry oil log book on receipt of the oil sample, if releaseable.	[R]				[I]	[I]							
1.3 Notify line group if the oil sample is not releasable.		[R]	(R)										KWH-S-047
1.4 Collect oil sample from Chemistry if not releasable and dispose of at LLW disposal facility.		[R]		[S]									
1.5 File the completed gamma Spectrum analysis reports with attached gamma ID work sheets as records.		[R]		[C]									
D. Oil segregation													
1.1 Segregate oil either as “awaiting analysis” or “contaminated” or “cleared”.	[R]	[I]		[S]									For waste oil that is still in the CZ and may be released, RP must follow KWH-S-047 requirements for contaminated material transfer from one controlled zone to another.
1.2 Oil must be stored in designated oil storage location in the controlled zone.	[R]												
1.3 Limit the volume of oil stored in the controlled zone to the absolute minimum.	[R]												
1.4 Remove oil as soon as possible, preferably within 48 hours.	[R]												
1.5 Storage must comply with Fire Risk Management regulations.	[R]						[I]						

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 4 – ISOCS WORK FLOW RESPONSIBILITIES

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	1 LINE GROUP	2 SRPA DAYS	3 SRPA SHIFTS	4 RPA/RPM	5 ISOCS OPERATOR	6 RP DVE (ISOCS SME)	7 RP ESCORT	8	9	10	11	12	NOTES & REFERENCES
A. ISOCS WORK FLOW PROCESS													
1.1 Identify tools to go for ISOCS checks.		[R]	(R)	[S]									KWH-S-047
1.2 Ensure that survey of tools/equipment to go for ISOCS evaluation is conducted.		[R]	(R)	[S]									KWH-S-047
1.3 Ensure RPM obtain keys for the ISOCS building..		[R]	(R)	[S]									
1.4 Ensure that tools/equipment are transferred to the ISOCS building.	[R]			[S]	[I]	[I]							
1.5 Ensure that tools / equipment are escorted to the ISOCS building.		[R]		(R)			[S]						
1.6 Perform gamma spectroscopy using ISCOS evaluation.		[I]	[I]		[S]	[R]							
1.7 ISOCS Operator to inform the SMEof the spectroscopy results.					[R]	[I]							
1.8 SME to inform the ISOCS operator and SRPA of evaluation results.		[I]	[I]		[I]	[R]							
1.9 Inform the owner when tools/equipment are due for removal.	[I]	(R)	[R]										
1.10 Ensure that tools / equipment are escorted back to controlled zone.	[R]						[S]						Return to CZ, if radioactivity on equipment is above release limits.
1.11 Perform Diagnostics on ISOCS when inoperable.					[R]	[R]							KWH-I-074

APPENDIX 5

JUSTIFICATION

Revision 11

1. Clarify roles and responsibilities for RP Sections.
2. Include comments from k10001427N: REPORT OF INSPECTION CONDUCTED inspection report, KPD-19-5.2. Linked to LI38459-003.
3. Remove certificates to ensure business efficiency, should the need arise to change/amend the certificates and prevent the unnecessary need to review an entire procedure.
4. Delete all references to SAM-11.
5. Add update the electronic Container logbook to movement of containers coming on and going off site of the workflow matrix. (Appendix 2).
6. Delete all references to TS-R-1 and replace with IAEA transport regulations.
7. Update as it relates to NI-01 Variation 19.

Revision 12

1. Full review to bring procedure in line with new revision of KWH-S-047.