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|---|--|-------------------------------------|--|---------------------------------------|------------------|
|  |  | <b>ADMINISTRATIVE<br/>PROCEDURE</b> | <b>Allocation<br/>Centre<br/>38A</b>   | <b>Reference Number<br/>KAA-637</b>   | <b>Rev<br/>6</b> |
| <b>NNR: NO<br/>No.:</b>   | <b>ACCESS CONTROL TO<br/>RADIOLOGICAL CONTROLLED ZONES</b> |                                     |  |                                       | <b>PAGE 1</b>    |
| <b>KORC<br/>NO</b>  | <b>ACCESS<br/>Nuclear Restricted</b>                       | <b>IMPORTANCE CATEGORY<br/>SR</b>   | <b>NEXT REVIEW DATE<br/>2022-01-29</b> | <b>DATE AUTHORISED<br/>2019-01-29</b> |                  |

| COMPILED / REVISED                        | REVIEWED                        | AUTHORISED      |
|---|---------------------------------|-----------------|
| (Sgd) B DE WAAL                           | (Sgd) T KARSTEN                 | (Sgd) V NTULI   |
| B DE WAAL                                 | T KARSTEN                       | V NTULI         |
| SENIOR SUPERVISOR<br>RADIATION PROTECTION | RADIATION PROTECTION<br>MANAGER | GENERAL MANAGER |
| DATE 2018-12-27                           | DATE 2018-12-27                 | DATE 2019-01-29 |

**THIS PROCEDURE HAS BEEN SEEN AND ACCEPTED BY:**

|               |                                      |
|---------------|--------------------------------------|
| D de Villiers | Document Custodian                   |
| N Mokoto      | Senior Licensing Physicist RP        |
| JB Groenewald | ALARA Co-ordinator                   |
| A Verwey      | Senior Supervisor                    |
| R Trimm       | Radiation Protection Training        |
| S Pietersen   | Senior Engineer Radiation Protection |
| N Cibi        | Senior Supervisor (Acting)           |
| C Adonis      | SRPA                                 |
| C Nieuwoudt   | SRPA (Acting)                        |

|                           |  |   |
|---------------------------|--|---|
| <b>FCA<br/>PROTECTION</b> | <b>ALARA REVIEW<br/>YES<br/>2018-10-14</b> | <b>SUPERSEDES<br/>KAA-637, Rev 5<br/>dd. 2015-09-03<br/>FULL REVIEW</b> |
|---------------------------|--|---|

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## 1.0 PURPOSE

- 1.1 To describe the responsibilities for the control, qualification and authorisation of personnel requiring access to Radiological Controlled Zones.

## 2.0 SCOPE

- 2.1 Applicable to all site personnel requiring access to Radiological Controlled Zones.
- 2.2 Emergency entries into control zones will be in accordance with KWH-S-025.
- 2.3 Access control to control zones during nuclear accident conditions will be handled in accordance with the Koeberg Emergency Plan procedures

## 3.0 DEFINITIONS AND ABBREVIATIONS

### 3.1 Definitions

- 3.1.1 **Access Control Point (ACP)** – Specific areas set up by the Radiation Protection Group to control the access of personnel. The areas are also used to display current area radiological surveillance data and Radiation Protection Certificates (RPC).
- 3.1.2 **Additional Dosimetry** – Dosimetry worn in addition to a principal dosimeter to assess an individual's dose for a specific entry or task in a Radiological Controlled Zone.
- 3.1.3 **Controlled Zones (CZs)** – Restricted, discrete areas containing radiological hazards where the integrated dose equivalent to a person may exceed 1000 µSv per annum. They are enclosed or demarcated areas classified in accordance with the following zone definitions:
- 3.1.3.1 A **Green Zone** exists where the ambient radiation exposure rate is less than 25 µSv/h.

**NOTE:** *The following areas are non-controlled zones if radiation levels are less than the stipulated limits:*

- (1) 0,5 µSv/h for all office areas.
- (2) 2,5 µSv/h for low occupancy office areas (< 20%).
- (3) 7,5 µSv/h for very low occupancy areas (< 5%) provided that:
  - (a), (b) and (c) only applicable to (2) and (3) above:
  - (a) Signposting is installed indicating "Do not Loiter in the Area, Radiation Hazard".
  - (b) Approval for such is given by the RP Manager or designee.

(c) Surveillance is performed on a quarterly basis.

- 3.1.3.2 A **Yellow Zone** exists where the ambient radiation exposure rate is greater than or equal to 25  $\mu\text{Sv/h}$ , but less than 1 mSv/h.
- 3.1.3.3 An **Orange Zone** exists where the ambient radiation exposure rate is greater than or equal to 1 mSv/h, but less than 10 mSv/h.
- 3.1.3.4 A **Red Zone** exists where the ambient radiation exposure rate is greater than or equal to 10 mSv/h.
- 3.1.4 **Principal Dosimeter** – TLD worn for the purpose of assessing an individual's legal dose equivalent during entry or work in a Radiological Controlled Zone.
- 3.1.5 **Protective Equipment** – In the context of the procedure only respirator face masks and filters.
- 3.1.6 **Radiation Worker (RW) and Special Person (SP)** – Persons who meet the requirements specified in 238-54, to gain entry to or work in Radiological Controlled Zones.

## 3.2 Abbreviations

- 3.2.1 **AP (RP)** – Authorised Person (Radiation Protection)
- 3.2.2 **EPD** – Electronic Personal Dosimeter
- 3.2.3 **RP** – Radiation Protection
- 3.2.4 **RPC** – Radiation Protection Certificate
- 3.2.5 **RW** – Radiation Worker
- 3.2.6 **SAP (RP)** – Senior Authorised Person (Radiation Protection)
- 3.2.7 **SP** – Special Person
- 3.2.8 **SRPA** – Senior Radiation Protection Assistant
- 3.2.9 **TLD** – Thermoluminescent Dosimeter
- 3.2.10 **WBC** – Whole Body Count

## **4.0 REFERENCES**

### **4.1 Referenced Documents**

- 4.1.1 335-2, Rev 4: Koeberg Nuclear Power Station Management Manual
- 4.1.2 KAA-634, Rev 10: Responsibilities for the Radioactive Material Control Programme
- 4.1.3 KAA-704, Rev 8: The Process for Containment Access Control
- 4.1.4 KSA-062, Rev 7: Reactor Building Access Requirements

### **4.2 Applicable Documents**

- 4.2.1 238-54: Radiological Protection Licensing Requirements for Koeberg Nuclear Power Station
- 4.2.2 KAA-500: The Process for Controlled Documents
- 4.2.3 KAA-591: Medical and Psychological Surveillance and Control of Radiation Workers and Licenced Operators
- 4.2.4 KAA-667: Processing a Permit to Work
- 4.2.5 KSA-011: The Requirements for Controlled Documents
- 4.2.6 KSH-001: The Administration and Quality Control of Radiation Dosimetry
- 4.2.7 KSH-002: Internal Administration and Control of Procedures
- 4.2.8 KSH-008: Radiation Protection Records, Data and Information Management
- 4.2.9 KSH-010: Functional Responsibilities for Radiation Protection at Koeberg Nuclear Power Station
- 4.2.10 KSH-011: Radiation Protection Certificate (RPC) Programme Requirements
- 4.2.11 KWH-B-015: External Dosimetry Control
- 4.2.12 KWH-S-021: Access Control
- 4.2.13 KWH-S-025: Guidelines for Initial Containment Entry and Emergency Entries into other Radiological Zones
- 4.2.14 KWH-S-043: Control of Red Radiation Zones and Radiation Protection Locked Zones

## **5.0 RESPONSIBILITIES**

5.1 See the Work Flow Responsibility Matrix (Appendix 1).

## **6.0 PROCEDURE**

6.1 Refer to the Work Flow Responsibility Matrix (Appendix 1).

6.2 Refer to Appendix 2 for the Process for the controlled zone entry restriction and unrestriction of radworkers.

## **7.0 RECORDS**

7.1 All records produced must be in accordance with procedure KSH-008, and as defined in the Work Flow Responsibility Matrix.

## **8.0 ATTACHMENTS**

Appendix 1 – Work Flow Responsibility Matrix


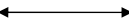
Appendix 2 – The Process for the Controlled Zone Entry Restriction and Unrestriction of Radworkers



Appendix 3 – Justification



| WORK FLOW RESPONSIBILITY MATRIX  |                         |             |              |          |                     |             |                 | APPENDIX 1           |                               |                |                  |                        |                               |  |  |
|--|-------------------------|-------------|--------------|----------|---------------------|-------------|-----------------|----------------------|-------------------------------|----------------|------------------|------------------------|-------------------------------|--|--|
| <div>R – Responsible</div> <div>A – Approve</div> <div>F – File</div> <div>• – Outside Matrix Scope</div> <div>Y/N or N/Y – Decision</div> <div>C – Concur</div> <div>I – Informed</div> <div>S – Service</div> <div>[ ] – Mandatory Requirement</div> <div>( ) – As Appropriate/Required</div> <div>Flow Path:</div> <div><div></div> Main Flow</div> <div><div></div> Secondary Flow</div> | ORGANISATION / FUNCTION |             |              |          |                     |             |                 |                      |                               |                |                  |                        | NOTES & REFERENCES            |  |  |
|  | MANAGER (RP)            | GROUP HEADS | RP DOSIMETRY | RP PLANT | RP DECON / RADWASTE | RP TRAINING | MEDICAL SECTION | RADIATION PROTECTION | SENIOR AUTHORISED PERSON (RP) | SPECIAL PERSON | RADIATION WORKER | AUTHORISED PERSON (RP) |                               |  |  |
| ACTIVITIES   | 1                       | 2           | 3            | 4        | 5                   | 6           | 7               | 8                    | 9                             | 10             | 11               | 12                     |                               |  |  |
| 1.0 RESPONSIBILITY   |                         |             |              |          |                     |             |                 |                      |                               |                |                  |                        |                               |  |  |
| 1.1 Responsible for Controlled Zone (CZ) Access Control.   | [R]                     |             |              |          |                     |             |                 |                      |                               |                |                  |                        | KSH-010                       |  |  |
| 1.2 Develop CZ Access Control Programme.   | [R]                     |             | [S]          | [S]      | [S]                 |             |                 |                      |                               |                |                  |                        | KSH-010                       |  |  |
| 1.3 Ensure that procedures are compiled to implement the programme.  | [R]                     |             | [S]          | [S]      | [S]                 |             |                 |                      |                               |                |                  |                        | KSH-002<br>KAA-500<br>KSA-011 |  |  |
| 1.4 Develop training programme.  | [R]                     |             |              |          |                     | [S]         |                 |                      |                               |                |                  |                        | KSH-010                       |  |  |
| 1.5 Specify adhoc training requirements for radworkers where necessary.  | [R]                     |             |              |          |                     | [C]         |                 |                      |                               |                |                  |                        |                               |  |  |
| 1.6 Qualify and authorise personnel on completion of training.   | (C)                     | [I]         | [I]          |          |                     | [R]         |                 |                      |                               |                |                  |                        | KSH-010                       |  |  |
| 1.7 Ensure that only authorised personnel enter CZs.   | [R]                     |             | [S]          | [S]      | [S]                 |             |                 |                      |                               |                |                  |                        | KWH-S-021                     |  |  |
| 2.0 IMPLEMENTATION   |                         |             |              |          |                     |             |                 |                      |                               |                |                  |                        |                               |  |  |
| 2.1 Radworkers   |                         |             |              |          |                     |             |                 |                      |                               |                |                  |                        |                               |  |  |
| 2.1.1 Identify personnel who require access to CZs.  | [R]                     |             |              |          |                     |             |                 |                      |                               |                |                  |                        |                               |  |  |
| 2.1.2 Send personnel for medicals.   | [R]                     | [I]         |              |          |                     | [I]         |                 |                      |                               | [I]            |                  |                        |                               |  |  |
| 2.1.3 Perform RW medical examination.  |                         | [I]         | [I]          |          |                     | [R]         |                 |                      |                               |                |                  |                        |                               |  |  |
| 2.1.4 Arrange and send personnel for RW training.  | [R]                     | [I]         |              |          | [S]                 |             |                 |                      |                               |                | [I]              |                        |                               |  |  |
| 2.1.5 Train, qualify and authorise RW as trained.  |                         | [I]         | [I]          |          |                     | [R]         |                 |                      |                               |                | [I]              |                        |                               |  |  |
| 2.1.6 Arrange and send RW to RP Dosimetry.   | [R]                     | [I]         |              |          |                     |             |                 | [I]                  |                               |                | [I]              |                        |                               |  |  |
| 2.1.7 Perform Whole Body Count.  |                         |             | [R]          |          |                     |             |                 |                      |                               |                |                  |                        | KSH-001                       |  |  |





| WORK FLOW RESPONSIBILITY MATRIX  |                         |             |              |          |                     |             |                 | APPENDIX 1           |                               |                |                  |                        |                    |  |  |
|--|-------------------------|-------------|--------------|----------|---------------------|-------------|-----------------|----------------------|-------------------------------|----------------|------------------|------------------------|--------------------|--|--|
| <div>R – Responsible</div> <div>A – Approve</div> <div>F – File</div> <div>• – Outside Matrix Scope</div> <div>Y/N or N/Y – Decision</div> <div>C – Concur</div> <div>I – Informed</div> <div>S – Service</div> <div>[ ] – Mandatory Requirement</div> <div>( ) – As Appropriate/Required</div> <div>Flow Path:</div> <div><div></div></div> <div><div></div></div> <div>Main Flow</div> <div>Secondary Flow</div> | ORGANISATION / FUNCTION |             |              |          |                     |             |                 |                      |                               |                |                  |                        | NOTES & REFERENCES |  |  |
|  | MANAGER (RP)            | GROUP HEADS | RP DOSIMETRY | RP PLANT | RP DECON / RADWASTE | RP TRAINING | MEDICAL SECTION | RADIATION PROTECTION | SENIOR AUTHORISED PERSON (RP) | SPECIAL PERSON | RADIATION WORKER | AUTHORISED PERSON (RP) |                    |  |  |
| ACTIVITIES   | 1                       | 2           | 3            | 4        | 5                   | 6           | 7               | 8                    | 9                             | 10             | 11               | 12                     |                    |  |  |
| 2.1.8 Issue TLD to RW.   |                         |             | [R]          |          |                     |             |                 |                      |                               |                |                  |                        | KWH-B-015          |  |  |
| 2.1.9 Enter the authorised RW on RADPRO.   |                         | [I]         | [R]          |          |                     |             |                 | [I]                  |                               | [I]            |                  |                        |                    |  |  |
| 2.1.10 Ensure that RW status is maintained as required.  |                         | [R]         | [S]          |          |                     |             | [S]             |                      |                               | [I]            |                  |                        |                    |  |  |
| 2.1.11 Group Heads, Section Heads or designated persons to generate / obtain expiry reports / dates from the RadPro website.   |                         | [R]         |              |          |                     | [I]         |                 |                      |                               |                |                  |                        |                    |  |  |
| 2.1.12 Ensure that RW are informed.  |                         | [R]         |              |          |                     |             |                 |                      |                               | [I]            |                  |                        |                    |  |  |
| 2.1.13 Attend necessary training requalification as required.  |                         |             |              |          |                     |             |                 |                      |                               |                | [R]              |                        |                    |  |  |
| 2.2 Special Persons  |                         |             |              |          |                     |             |                 |                      |                               |                |                  |                        |                    |  |  |
| 2.2.1 Identify Special Persons.  |                         | [R]         |              |          |                     |             |                 |                      |                               |                |                  |                        |                    |  |  |
| 2.2.2 Liaise with RP Dosimetry for Special Person authorisation requirements.  |                         | [R]         | [S]          |          |                     |             |                 |                      |                               |                |                  |                        | 238-54 KSH-001     |  |  |
| 2.2.3 Complete the Special Person form.  |                         | [R]         |              |          |                     |             |                 |                      |                               | (C)            |                  |                        | KWH-B-015          |  |  |
| 2.2.4 Liaise with SAP (RP) on Special Persons duties in the CZ.  |                         | [R]         |              |          |                     |             |                 | [S]                  | [C]                           |                |                  |                        |                    |  |  |
| 2.2.5 Enter Radiological requirements as appropriate on the Special Persons form.  |                         |             |              |          |                     |             |                 |                      | [R]                           |                |                  |                        | KSH-001            |  |  |
| 2.2.6 Authorise and sign Special Persons form.   |                         | [I]         |              |          |                     |             |                 |                      | [R]                           |                |                  |                        |                    |  |  |
| 2.2.7 Arrange and send Special Person to RP Dosimetry.   |                         | [R]         | [I]          |          |                     |             |                 |                      |                               | [I]            |                  |                        |                    |  |  |
| 2.2.8 Check that the Special Person meets the requirements of the Standard.  |                         |             | [R]          |          |                     |             |                 |                      |                               | [C]            |                  |                        | 238-54 KSH-001     |  |  |

| WORK FLOW RESPONSIBILITY MATRIX  |                         |             |              |          |                     |             |                 |                      | APPENDIX 1                   |                |                  |                        |                          |                |  |                      |
|--|-------------------------|-------------|--------------|----------|---------------------|-------------|-----------------|----------------------|------------------------------|----------------|------------------|------------------------|--------------------------|----------------|--|----------------------|
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|  | MANAGER (RP)            | GROUP HEADS | RP DOSIMETRY | RP PLANT | RP DECON / RADWASTE | RP TRAINING | MEDICAL SECTION | RADIATION PROTECTION | SENIOR AUTHORISED PRSON (RP) | SPECIAL PERSON | RADIATION WORKER | AUTHORISED PERSON (RP) | RESPONSIBLE PERSON (PSR) | JOB SUPERVISOR |  |                      |
| ACTIVITIES   | 1                       | 2           | 3            | 4        | 5                   | 6           | 7               | 8                    | 9                            | 10             | 11               | 13                     | 14                       | 15             |  |                      |
| 2.2.9 Perform WBC, if required.  |                         |             | [R]          |          |                     |             |                 |                      |                              | [I]            |                  |                        |                          |                |  | KSH-001              |
| 2.2.10 Issue TLD to Special Person.  |                         |             | [R]          |          |                     |             |                 |                      |                              |                |                  |                        |                          |                |  | KWH-B-015            |
| 2.2.11 Make sure that Special Person is escorted at all times by an authorised RW in the CZ.   |                         | [R]         |              |          |                     |             |                 | [S]                  |                              | [I]            | [I]              |                        |                          |                |  | KSH-001              |
| <b>3.0 AUTHORISATION</b>   |                         |             |              |          |                     |             |                 |                      |                              |                |                  |                        |                          |                |  |                      |
| 3.1 Compile RPCs for entry to CZ.  |                         |             |              |          |                     |             |                 |                      |                              |                |                  | [R]                    |                          |                |  | KSH-011              |
| 3.2 Authorise RPCs for entry to Green, Yellow and Orange CZs.  |                         |             |              |          |                     |             |                 |                      |                              |                |                  | [R]                    |                          |                |  | KSH-011              |
| 3.3 Authorise RPCs for entry to Red CZs and High Risk RPC.   |                         |             |              |          |                     |             |                 |                      | [R]                          |                |                  |                        |                          |                |  | KSH-011<br>KWH-S-043 |
| 3.4 Authorise and control the keys for entry to Red Zones or RP Locked Zones.  |                         |             |              |          |                     |             |                 |                      |                              |                |                  | [R]                    |                          |                |  | KSH-011<br>KWH-S-043 |
| 3.5 Notify RW of RPC No. and requirements of RPC.  |                         |             |              |          |                     |             |                 |                      |                              |                |                  |                        |                          | [R]            |  | KAA-667              |
|  |                         |             |              |          |                     |             |                 |                      |                              |                |                  |                        |                          |                |  |                      |
|  |                         |             |              |          |                     |             |                 |                      |                              |                |                  |                        |                          |                |  |                      |
|  |                         |             |              |          |                     |             |                 |                      |                              |                |                  |                        |                          |                |  |                      |
|  |                         |             |              |          |                     |             |                 |                      |                              |                |                  |                        |                          |                |  |                      |
|  |                         |             |              |          |                     |             |                 |                      |                              |                |                  |                        |                          |                |  |                      |
|  |                         |             |              |          |                     |             |                 |                      |                              |                |                  |                        |                          |                |  |                      |
|  |                         |             |              |          |                     |             |                 |                      |                              |                |                  |                        |                          |                |  |                      |
|  |                         |             |              |          |                     |             |                 |                      |                              |                |                  |                        |                          |                |  |                      |

| WORK FLOW RESPONSIBILITY MATRIX  |                         |                      |                                   |                       |           |            | APPENDIX 1 |   |   |    |    |    |   |
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|  | RP ACCESS CONTROLLER    | RADIATION PROTECTION | SPECIAL PERSON / RADIATION WORKER | SPECIAL PERSON ESCORT | DUTY SRPA | RP MONITOR |            |   |   |    |    |    |   |
| ACTIVITIES   | 1                       | 2                    | 3                                 | 4                     | 5         | 6          | 7          | 8 | 9 | 10 | 11 | 12 |   |
| <b>4.0 ACCESS CONTROL</b>  |                         |                      |                                   |                       |           |            |            |   |   |    |    |    |   |
| <b>4.1 Self Access</b>   |                         |                      |                                   |                       |           |            |            |   |   |    |    |    |   |
| 4.1.1 Collect TLD from assigned storage rack.  |                         |                      | [R]                               |                       |           |            |            |   |   |    |    |    |   |
| 4.1.2 Check if correct SABS number and name is on the TLD.   |                         |                      | ↓ [R]                             |                       |           |            |            |   |   |    |    |    |   |
| 4.1.3 Collect EPD from assigned storage rack.  |                         |                      | ↓ [R]                             |                       |           |            |            |   |   |    |    |    |   |
| 4.1.4 Obtain RPC number required for the entry and check RPC requirements.   |                         |                      | ↓ [R]                             |                       |           |            |            |   |   |    |    |    |   |
| 4.1.5 Place EPD in self access reader slot and perform self access.  |                         |                      | ↓ [R]                             |                       |           |            |            |   |   |    |    |    | Scan TLD, enter access code, enter RPC number.                                |
| 4.1.6 Confirm RPC requirements are read and understood.  |                         |                      | ↓ [R]                             |                       |           |            |            |   |   |    |    |    |   |
| 4.1.7 Proceed to enter controlled zone when access is approved.  |                         |                      | ↓ [R]                             |                       |           |            |            |   |   |    |    |    |   |
| 4.1.8 Report to RP desk in the case of access denied.  | [I]                     |                      | ↓ [R]                             |                       |           |            |            |   |   |    |    |    | Assisted access required or entry not approved.                               |
| 4.1.9 Check current surveillance data on areas to be visited in controlled zone.   |                         |                      | ↓ [R]                             |                       |           |            |            |   |   |    |    |    |   |
| 4.1.10 Scan EPD to grant access through turnstile and/or door as applicable.   |                         |                      | ↓ [R]                             |                       |           |            |            |   |   |    |    |    | RPOO turnstile and door. Chem, ISI, and DWS door controlled by access reader. |
| 4.1.11 Comply with the requirements of the RPC and RP rules while inside the controlled zone.  |                         |                      | ↓ [R]                             |                       |           |            |            |   |   |    |    |    |   |
|  |                         |                      |                                   |                       |           |            |            |   |   |    |    |    |   |
|  |                         |                      |                                   |                       |           |            |            |   |   |    |    |    |   |

| WORK FLOW RESPONSIBILITY MATRIX  |                         |                      |                                   |                       |           |            | APPENDIX 1 |   |   |    |    |    |  |
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|  | RP ACCESS CONTROLLER    | RADIATION PROTECTION | SPECIAL PERSON / RADIATION WORKER | SPECIAL PERSON ESCORT | DUTY SRPA | RP MONITOR |            |   |   |    |    |    |  |
| ACTIVITIES   | 1                       | 2                    | 3                                 | 4                     | 5         | 6          | 7          | 8 | 9 | 10 | 11 | 12 |  |
| <b>4.2 Assisted Access.</b>  |                         |                      |                                   |                       |           |            |            |   |   |    |    |    |  |
| 4.2.1 Collect TLD from assigned storage rack.  |                         |                      | [R]                               |                       |           |            |            |   |   |    |    |    |  |
| 4.2.2 Check if correct SABS number and name is on the TLD.   |                         |                      | [R]                               |                       |           |            |            |   |   |    |    |    |  |
| 4.2.3 Collect EPD from assigned storage rack.  |                         |                      | [R]                               |                       |           |            |            |   |   |    |    |    |  |
| 4.2.4 Obtain RPC number required for the entry and check RPC requirements.   |                         |                      | [R]                               |                       |           |            |            |   |   |    |    |    |  |
| 4.2.5 Read RPC requirements to determine reason for assisted access  | [R]                     |                      | [I]                               |                       |           |            |            |   |   |    |    |    | Additional Dosimetry required<br>Resp. protection required<br>Briefing required.<br>RP cover required. |
| 4.2.6 Explain the RPC requirements and precautions specified by the SAP(RP) to the SP.   |                         |                      |                                   | [R]                   |           |            |            |   |   |    |    |    |  |
| 4.2.7 Give TLD and EPD to RP and inform RP of the RPC number and ID or passport number.  | [I]                     |                      | [R]                               |                       |           |            |            |   |   |    |    |    | SP hands in the SP form with the TLD received at RP Dos.   |
| 4.2.8 Scan RW or SP TLD, enter RPC number and ID or passport number.   | [R]                     |                      |                                   |                       |           |            |            |   |   |    |    |    | KWH-S-021<br>LDM3000<br>Manual entry form in case of LDM3000 unavailability.                           |
| 4.2.9 Issue any additional dosimetry and protective equipment as stated on the RPC.  | [R]                     |                      |                                   |                       |           |            |            |   |   |    |    |    | DosiGui.   |
| 4.2.10 Confirm RPC requirements are read and understood and actions completed.   | [R]                     |                      | [C]                               |                       |           |            |            |   |   |    |    |    | No number or understanding of RPC requirements – No entry.   |
| 4.2.11 Is RP cover required on RPC? (Inform duty SRPA).  | N/Y                     |                      |                                   |                       |           |            |            |   |   |    |    |    |  |
| 4.2.12 Allocate RP monitor.  |                         |                      |                                   |                       | [R]       |            |            |   |   |    |    |    |  |
| 4.2.13 Check that the SP is escorted by a RW.  | [R]                     |                      |                                   |                       |           |            |            |   |   |    |    |    |  |

| WORK FLOW RESPONSIBILITY MATRIX  |                         |                      |                                   |                       |           | APPENDIX 1 |   |   |   |    |    |    |  |
|--|-------------------------|----------------------|-----------------------------------|-----------------------|-----------|------------|---|---|---|----|----|----|--|
| R – Responsible<br>A – Approve<br>F – File<br>• – Outside Matrix Scope<br>Y/N or N/Y – Decision<br>C – Concur<br>I – Informed<br>S – Service<br>[ ] – Mandatory Requirement<br>( ) – As Appropriate/Required<br>Flow Path:<br> Main Flow<br> Secondary Flow | ORGANISATION / FUNCTION |                      |                                   |                       |           |            |   |   |   |    |    |    | NOTES & REFERENCES   |
|  | RP ACCESS CONTROLLER    | RADIATION PROTECTION | SPECIAL PERSON / RADIATION WORKER | SPECIAL PERSON ESCORT | DUTY SRPA | RP MONITOR |   |   |   |    |    |    |  |
| ACTIVITIES   | 1                       | 2                    | 3                                 | 4                     | 5         | 6          | 7 | 8 | 9 | 10 | 11 | 12 |  |
| 4.2.14 Return TLD and EPD to RW/SP.  | [R]                     |                      |                                   |                       |           |            |   |   |   |    |    |    |  |
| 4.2.15 Check current surveillance data on areas to be visited in controlled zone.  |                         |                      | [R]                               |                       |           |            |   |   |   |    |    |    |  |
| 4.2.16 Scan EPD to grant access through turnstile and/or door as applicable.   |                         |                      | [R]                               |                       |           |            |   |   |   |    |    |    | RPOO turnstile and door Chem, ISI, DWS door controlled by access reader. |
| 4.2.17 Remain with SP at all times inside the controlled zone and ensure compliance with RPC requirements.   |                         |                      |                                   | [R]                   |           |            |   |   |   |    |    |    |  |
| 4.2.18 Be responsible for SP not exceeding the specified dose while in the controlled zone.  |                         |                      |                                   | [R]                   |           |            |   |   |   |    |    |    |  |
| 4.2.19 Comply with the requirements of the RPC and RP rules while inside the controlled zone.  |                         |                      | [R]                               |                       |           |            |   |   |   |    |    |    |  |
| <b>5.0 EXIT FROM CZ</b>  |                         |                      |                                   |                       |           |            |   |   |   |    |    |    |  |
| 5.1 Survey self and items in a manner specified by RP on exit from controlled zone.  |                         |                      | [R]                               |                       |           |            |   |   |   |    |    |    | Portal monitors. Small articles monitors, friskers.                      |
| 5.2 Check the reading of the EPD prior to exiting from the controlled zone.  |                         |                      | [R]                               |                       |           |            |   |   |   |    |    |    |  |
| 5.3 Report any contamination event to RP.  |                         | [I]                  | [R]                               |                       |           |            |   |   |   |    |    |    |  |
| 5.4 Report any alarming dosimeter to RP  |                         | [I]                  | [R]                               |                       |           |            |   |   |   |    |    |    | RP will action.  |
| 5.5 Return all additional dosimetry to RP desk, or as instructed by RP.  |                         |                      | [R]                               |                       |           |            |   |   |   |    |    |    |  |
| 5.6 Return the TLD and EPD to the allocated storage rack or tray.  |                         |                      | [R]                               |                       |           |            |   |   |   |    |    |    |  |
| 5.7 Escort SP to receive exit WBC if SP was category B.  |                         |                      |                                   | [R]                   |           |            |   |   |   |    |    |    | Category indicated on SP form.   |

## APPENDIX 2

### THE PROCESS FOR CONTROLLED ZONE ENTRY RESTRICTION AND UNRESTRICTION OF RADWORKERS

#### The Process for Controlled Zone Entry Restriction and Unrestriction of Radworkers

#### INTRODUCTION

Radworkers are required to meet certain license binding requirements in order to be able to function in the controlled zone without any limitation.

In order to ensure the safety of the individual, co-workers and the plant as well as to meet the licence binding requirements, Radiation Protection will restrict a person from entry to controlled zones until all concerns are resolved.

This brief serves to inform the station of the Radiation Protection (RP) process for radworker restriction and unrestricted of their entry to controlled zones. The intent is to include this process into a suitable approved station document at the earliest possible convenience.

It is expected of the applicable line manager and supervisor to manage their radworkers' authorisation as well as behaviours and to take the lead in ensuring that all the requirements are adhered to in order that personnel and nuclear safety is ensured at all times.

#### Reasons for Restrictions:

1. Personnel Contamination.
2. Lapse of administrative certification.
3. RP rule violation and Non-Compliance.
4. Anomalies.
5. Medical reasons.
6. Requirement to perform an investigation Whole Body count.

**A Condition Report (CR) shall be raised for restrictions due to reasons 1, 2 and 3.**

#### 1. PERSONNEL CONTAMINATION

Applicable to EPRI level 1 and above [above 100 counts/min].

#### Purpose:

1. To ensure personnel safety whilst the incident is investigated to determine the cause of contamination. This investigation includes interviews with the radworker by RP and the line supervisor or manager and completion of the contamination report.
2. To decide on the course of action resulting from the radworker contamination, e.g. if internal contamination is suspected, the individual will be sent for a Whole Body Count (WBC).
3. To prevent the spread of contamination in the plant by mitigating it, e.g. cleaning, containing contamination source (e.g. leak), etc.
4. To ensure that the radworkers supervisor/manager is informed, aware, and involved in the investigation.

**APPENDIX 2 (continued)****THE PROCESS FOR CONTROLLED ZONE ENTRY RESTRICTION AND UNRESTRICTION OF RADWORKERS****Restriction Process:**

1. When a radworker is contaminated on his/her skin and/or clothing/shoes, EPRI level 1 ( $\geq 100$  ccpm) or higher, the duty SRPA will restrict the radworker from entering the Controlled Zone.

**Unrestriction Process:**

1. RP will perform an initial investigation to determine the cause of contamination and to prevent the spread of contamination.
2. A CR is to be raised by the line group and a copy submitted to RP.
3. If the initial investigation determines that the contamination incident occurred due to a rule violation, the rule violation unrestrictioning process must be followed.
4. If the initial investigation determines that the contamination incident did not occur due to a rule violation, and procedure requirements do not stipulate that an investigation whole body count is required, the radworker can be unrestricted by either of the three Section Heads of RP Plant as soon as RP receives a copy of the CR.
5. Delegation of authority is given to Senior Radiation Protection Assistant (Shift section only).

**2. LAPSE OF ADMINISTRATIVE CERTIFICATION****Restriction Process:**

There are three types of administrative certification that, if expired, the radworker will be restricted from entry to the Controlled Zone:

- a. Radworker training re-qualification;
- b. Whole Body Count;
- c. Medical.

Radworkers, Supervisors and Managers are urged to pay attention to the expiry date information available by:

- Checking their status on the Radpro website,
- Supervisors to inform members of staff who have no access to computers,
- Advanced booking (in line with the FFD system).

**Unrestriction Process:**

1. A CR is raised.
2. Group manager motivates for re-instatement based on corrective action taken to prevent re-occurrence.
3. Restriction will be lifted by RP Manager or his/her delegate.
4. The power of delegation is given to Head of Dosimetry.

**NOTE:**

- Cases where repeated certification expiry is noted that may only be lifted by the RP Manager.
- Once a radworker is restricted and Radpro is updated with the details for certification expiries, his/her personal dosimeter [TLD] will be withdrawn from the rack and Security will be informed to ensure that the radworker is physically locked out of the Controlled Zone.

## APPENDIX 2 (continued)

### THE PROCESS FOR CONTROLLED ZONE ENTRY RESTRICTION AND UNRESTRICTION OF RADWORKERS

#### 3. RP Rule Violation and Non-Compliance

Restriction of a radworker is due to non-compliance with RP rules or/and due to poor Radworker practices, as documented in relevant RPCs and the Radworkers Training Material. The focus is on accountability and ownership. Line managers are expected to own the RP programme at their respective groups and eradicate non-compliance by management intervention.

#### **Typical recorded reasons of non-compliance with RP rules and RP programme are:**

- EPD Alarms: the EPD was not monitored or the worker did not leave the area in time.
- Not reporting EPD dose or dose rate alarms.
- Not wearing correct dosimetry.
- Returning to CZ with a switched off EPD after leaving the Argos unit.
- Noncompliance to RPC requirements.
- Noncompliance to requirements stipulated in the radworkers training course.
- Not reporting to SRPA in 8m airlock [during outages] when required.
- Not complying with dressing policy.
- Not respecting RP sign posting and CZ barriers/boundaries.
- Eating, chewing, smoking, drinking in any control zone.
- Hopping Argos's when alarms or fault messages are given.
- Not contacting RP as required, e.g.: suspected contamination.
- Self-decontamination without informing RP.
- Violation of source handling and control requirements.
- Radioactive Material Controls: clearance and transport storage requirements were violated.
- Special person issues, e.g. incorrect escorting responsibilities

#### **Unrestriction Process:**

Should a Radworker be restricted due to violation of RP rules the following are required by the line manager:

1. A CR is to be raised;
2. Investigation to be conducted;
3. Cause and contributing causes identified;
4. Extent of condition to be determined;
5. Appropriate and effective corrective actions identified;
6. OE/team brief of incident to be communicated within the respective section/group;
7. Application to unrestrict the individual to be forwarded from the respective line manager to the RP Manager or RP Operations Manager. The application must demonstrate that requirements detailed above are met and effective measures have been implemented to prevent a recurrence. The application will form part of the unrestricted record.



**APPENDIX 2 (continued)****THE PROCESS FOR CONTROLLED ZONE ENTRY RESTRICTION AND  
UNRESTRICTION OF RADWORKERS****Suspension due to Repeat RP Rule Violation/Non-Compliance**

After a radworkers second RP restriction due to rule violation/non-compliance over any 12 month period, radworker status will be revoked and will only be reinstated after successful completion of the Radworkers Initial Course. The unrestriction process for rule violation, as stated above, must be applied.

**4. Anomalies**

- To investigate RP anomalies e.g. to evaluate a dose discrepancy, to resolve a dosimeter numbering discrepancy, to retrieve a TLD worn by a Radworker during changeover, etc.
- If a radworker terminates service whilst restricted for a rule violation, the Dosimetry Section will note this fact in the comment field of RADPRO-Radworker. The individual will not be reinstated as a Radworker until the restriction is lifted by following the rule violation unrestriction process.

***Unrestricting process:***

The Head of RP Dosimetry may lift a restriction once an anomaly has been resolved.

**5. Restriction due to Medical Reasons - FFD*****Radworkers restricted by a Medical Practitioner:***

Once it has been established that the radworker is medically unfit to resume radworkers duties due to health reasons, he/she is informed through the process stipulated in procedure KAA-591.

RP Dosimetry will be informed by the Medical Centre by means of the Health Register, of any restriction to be applied for medical reasons.

Once the radworker is informed, the reasons are discussed with the supervisor, in accordance with procedure KAA-591.

The Medical Centre monitors the progress of the individual until the person is allowed to perform duties inside the controlled zone again. Radworkers are urged to keep their appointments for follow up on-site or present the reports from their treating doctors. Otherwise delays of assessments for their return to their normal duty are caused.

***Unrestricting process:***

After a follow up and further evolutions, it is the Site Appointed Medical Practitioner who will make a decision to unrestrict the radworker and make an entry on the Health Register, which is provided to RP Dosimetry for updating RADPRO.

**6. Requirement to perform internal dose assessment**

Following a suspected uptake of radionuclides, or a confirmed or suspected exposure to airborne radio-activity, a radworker will be restricted in order to perform an investigation whole body count or other methods of internal dose assessment (e.g. urinalysis). Based on the outcome, the Head of RP Dosimetry will enforce the restriction or lift the restriction, taking into consideration relevant procedural requirements for further investigation.

## **APPENDIX 2 (continued)**

### **THE PROCESS FOR CONTROLLED ZONE ENTRY RESTRICTION AND UNRESTRICTION OF RADWORKERS**

#### **FOR RP GROUP USE**

##### **1. Process to restrict Radworkers:**

###### **1.1 Non-compliance**

- Inform the Radworker (if he/she is on site) that he/she has been restricted and the reason for the restriction.
- Inform the Radworkers Manager (alternatively the Section Head) that the individual has been restricted and the reason for the restriction.
- Fill in the individual's name on the Index page of the Restriction File. Initial in the "Restricted" column.
- Fill in the top section of the restriction form stating the reason for the restriction (ensure that all the information is filled in).
- Sign and date the form.
- Restrict the individual on RADPRO.

**To restrict an individual on RadPro, follow the process stipulated in procedure KWH-S-021.**

- Inform Dosimetry by telephone call and follow up email.
- Make a log entry of the restriction.
- Withdraw personal dosimeter from the rack [RP dosimetry responsibility].
- Inform Security.
- Update Radworker status file.

###### **1.2 Anomalies and Certification expiries**

- Inform the Radworker (if he/she is on site) that he/she has been restricted and the reason for the restriction.
- Inform the Radworkers Manager (alternatively the Section Head) that the individual has been restricted and the reason for the restriction.
- Restrict the individual on RADPRO.

## **APPENDIX 2 (continued)**

### **THE PROCESS FOR CONTROLLED ZONE ENTRY RESTRICTION AND UNRESTRICTION OF RADWORKERS**

#### **FOR RP GROUP USE**

#### **2. Process to unrestrict Radworkers:**

##### **2.1 Non compliance**

- Fill in the bottom section of the restriction form.
- Fully state the reason for lifting the restriction.
- Attach supporting documentation i.e. letter/e-mail from Line Manager recommending that the restriction be lifted and proof that a PN was raised.
- Sign and date the restriction form.
- Initial in the unrestricted column on the Index page of the Restriction File.
- Lift the restriction on RADPRO.
- Inform Dosimetry by telephone call and follow up e-mail.
- When RADPRO is not available, check the Radworker status file and restriction file before granting access via manual entry.

##### **2.2 Lifting restriction for anomalies and certification expiries**

- Lift the restriction on RADPRO.
- For certification expiries, check that the individual is fully authorised.

#### **Trending**

- The RP Management team will review all restrictions on a monthly basis to identify adverse trends or repeat offenders.

### **APPENDIX 3**

### **JUSTIFICATION**

#### **Revision 5**

1. Full review.

#### **Revision 6**

1. Full review.