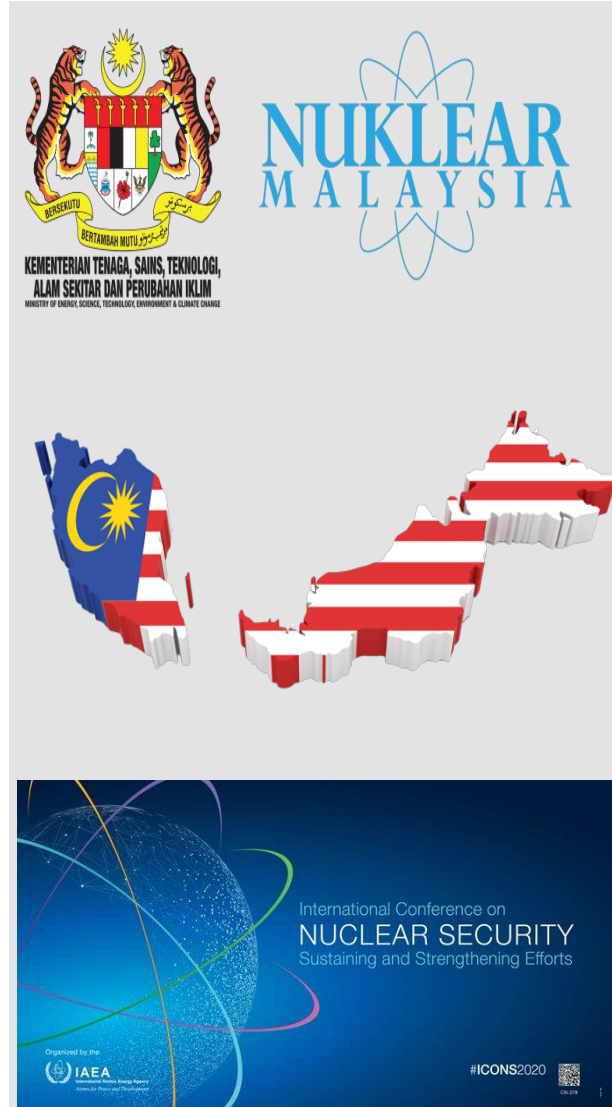


DEVELOPMENT OF A COMPREHENSIVE SECURITY PLAN FOR RADIOACTIVE WASTE DISPOSAL FACILITY IN MALAYSIA (BOREHOLE DISPOSAL FACILITY)

MOHD KHAIRUL AZFAR BIN RAMLI
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RADIATION SAFETY & HEALTH DIVISION
MALAYSIAN NUCLEAR AGENCY



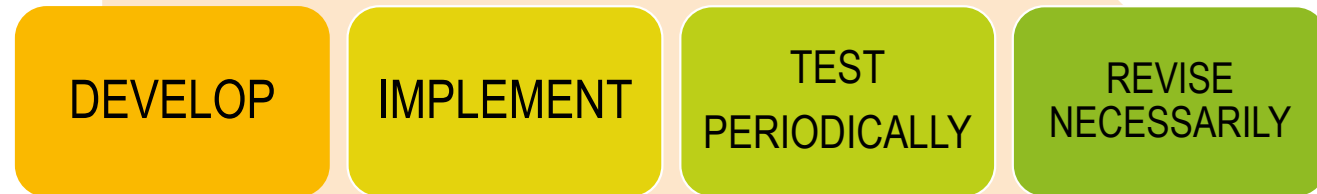
WHAT IS SECURITY PLAN?

A document — prepared by the operator and possibly required to be reviewed by the regulatory body — that presents a detailed description of the security arrangements in place at a facility.

Security of Radioactive Sources_NSS11

INTRODUCTION

THE OPERATOR SHALL



COMPLY WITH ITS PROVISIONS

MALAYSIA LEGISLATIVE REQUIREMENT

MALAYSIA LEGISLATIVE REQUIREMENT FOR NUCLEAR SECURITY CONTROL

695

P.U. (A) 46.

(4) The licensee shall ensure that the content, features and extent of emergency plans take into account the results of any accident analysis, operating experience and accidents that have occurred with radiation sources of a similar type.

(5) The licensee shall review and update the emergency plan as determined by the appropriate authority.

(6) The licensee shall provide training for personnel who are or will be involved in implementing the emergency plan.

(7) The emergency plans shall be rehearsed at suitable intervals in conjunction with the relevant authorities.

(8) The licensee shall provide prior information to the members of the public who could be affected by an accident which may occur at his facility.

Accountability for radiation source

69. The licensee shall maintain an accountability system that includes records of—

- (a) the location and description of each radiation source which is in his possession or under his control; and
- (b) the activity and description of each radioactive material, nuclear material and prescribed substance which is in his possession or under his control.

Security and protection of radiation source

70. The licensee shall take all measures to ensure the security and protection of all radiation sources in his possession or under his control to prevent theft, loss or sabotage.

Notification of theft, loss or sabotage

71. (1) The licensee shall, upon discovering any theft, loss or sabotage of any radiation source in his possession or under his control—

Security and protection of radiation source

70. The licensee shall take all measures to ensure the security and protection of all radiation sources in his possession or under his control to prevent theft, loss or sabotage.

Atomic Energy Licensing Act 1984 Atomic Energy Licensing (Basic Safety Radiation Protection) Regulations 2010

LICENSE CONDITION (LPTA/A/724)

LICENSE CONDITION (LPTA/A/724)

MANDATORY
TO DEVELOP
AND MAINTAIN
SECURITY
PLAN

BAHAGIAN IV – KAWALAN SEKURITI

24. Kawalan Sekuriti Kemudahan Penyinaran

Pemegang lesen hendaklah memastikan bahawa bahan radioaktif dikawal dengan lebih ketat dan terjaga untuk mengelakkan kecurian, kehilangan atau pencabutan dengan mengadakan:

24.1 Rancangan Sekuriti (*Security Plan*)

- a) Pemegang lesen hendaklah mengadakan Rancangan Sekuriti yang menerangkan bagaimana langkah-langkah sekuriti dipenuhi ke atas bahan radioaktif yang diluluskan oleh pihak berkuasa keselamatan dan perlu dikaji semula sekurang-kurangnya setahun sekali atau apabila berlaku sebarang perubahan bagi memastikan ianya sesuai dengan keadaan semasa.
- b) Pemegang lesen hendaklah melaksana dan menguji sepenuhnya Rancangan Sekuriti yang diluluskan oleh AELB serta mendokumentenkan laporan pelaksanaan dan dimaklumkan kepada AELB.

AELB GUIDELINE LEM/TEK/62 SEM 2 2018

SECURITY PLAN GUIDELINE FOR RADIOACTIVE SOURCES

LEM/TEK/62 Sem.2
29 Oktober 2018

PANDUAN TEKNIKAL

PANDUAN PENYEDIAAN
PELAN SEKURITI
(BAHAN RADIOAKTIF)



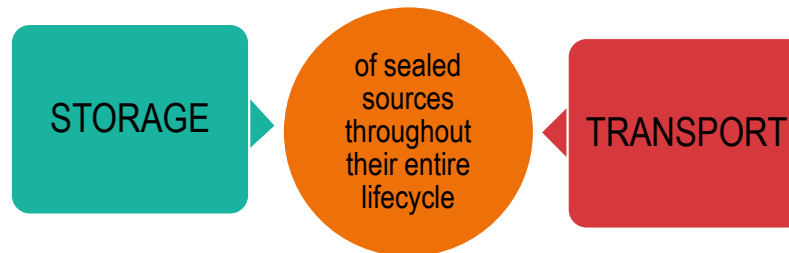
Lembaga Perlesenan Tenaga Atom
Kementerian Tenaga, Sains, Teknologi, Alam Sekitar
Dan Perubahan Iklim
Batu 24, Jalan Dengkil, 43800 Dengkil Selangor Darul Ehsan

Tel: 03-8922 5888
Fax: 03-8922 3685
Laman Web: <http://www.aelb.gov.my>

GUIDELINE AIM/PURPOSE

**AELB GUIDELINE
LEM/TEK/62 SEM 2
2018**

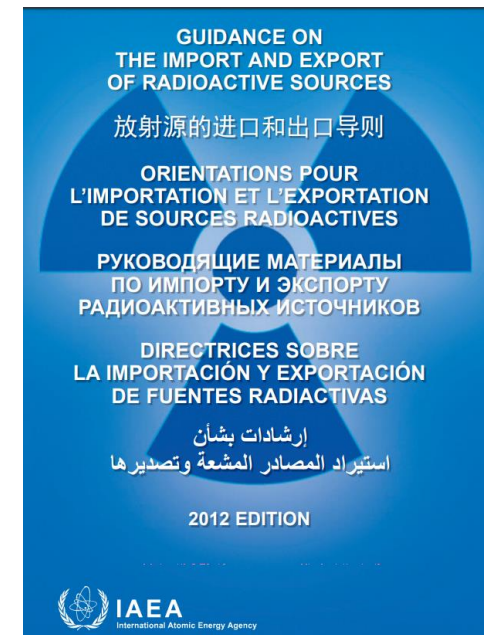
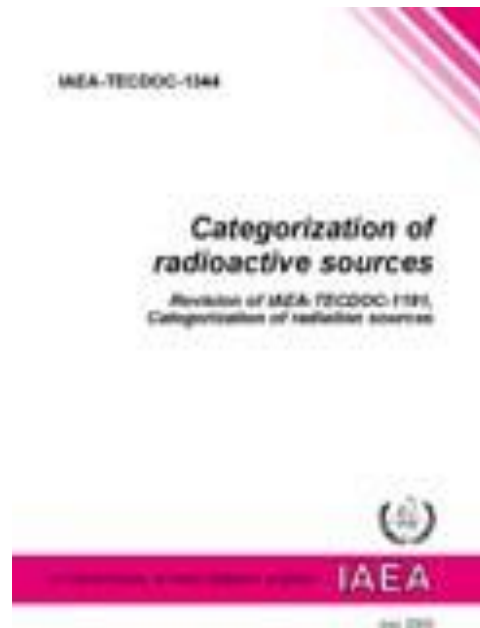
A security plan document sets out the security measures that the facility implements to prevent the



RADIOACTIVE CATEGORIZATION

AELB GUIDELINE
LEM/TEK/62 SEM 2
2018

- Code of Conduct on The Safety and Security of Radioactive Sources“ & others related document as below:
- I.Categorization of Radioactive Sources (IAEA-TECDOC-1344)
- II.Security of Radioactive Sources (IAEA-TECDOC-1344)
- III.Guidance on Import/Export of Radioactive Sources



CONTENT OF SECURITY PLAN

**AELB GUIDELINE
LEM/TEK/62 SEM 2
2018**

INTRODUCTION

SECURITY MANAGEMENT

INTERNAL SECURITY

STORAGE

SECURITY POLICY

SITE PLAN

TRANSPORTATION

INFORMATION SECURITY

PERIMETER

ACCESS CONTROL

THRUSTWORTHINESS

PHYSICAL PROTECTION
SYSTEM MAINTENANCE

CONTINGENCY PLAN

SECURITY
AWARENESS

SECURITY
PROCEDURE

CHALLENGE



New Technology To Implement In The World



Possess More than 12,000 Cat 3-5 of radioactive DSRS



Development Of Security Plan for facility that never been existed before



Long term security measure



Requirement By AELB (convincing)



Security measure as main concerned



Confusing on RS categorization



Limited Human Resources availability

TO MAINTAIN & TO SUSTAIN ACCORDINGLY

THE BIGGEST CHALLENGE



WAY FORWARD

01 Document Development Based On Threat Assessment

Evaluation Of Effectiveness **02**

03 Radioactive Categorization Based On Threshold Value
(Radioactive Accounting)

END OF SLIDE



Thank You
For Your Attention

SPECIAL THANKS

- INTERNATIONAL ATOMIC ENERGY LICENSING AGENCY (IAEA)
- MINISTRY OF ENERGY, SCIENCE, TECHNOLOGY, ENVIRONMENT & CLIMATE CHANGE (MESTECC)
 - MALAYSIAN NUCLEAR AGENCY
 - ATOMIC ENERGY LICENSING BOARD (AELB)
 - ASSOC. PROF. DR IRMAN ABD RAHMAN (UKM)
 - NUR SHAZWANI BINTI ZAINAL ABDIN (AELB)

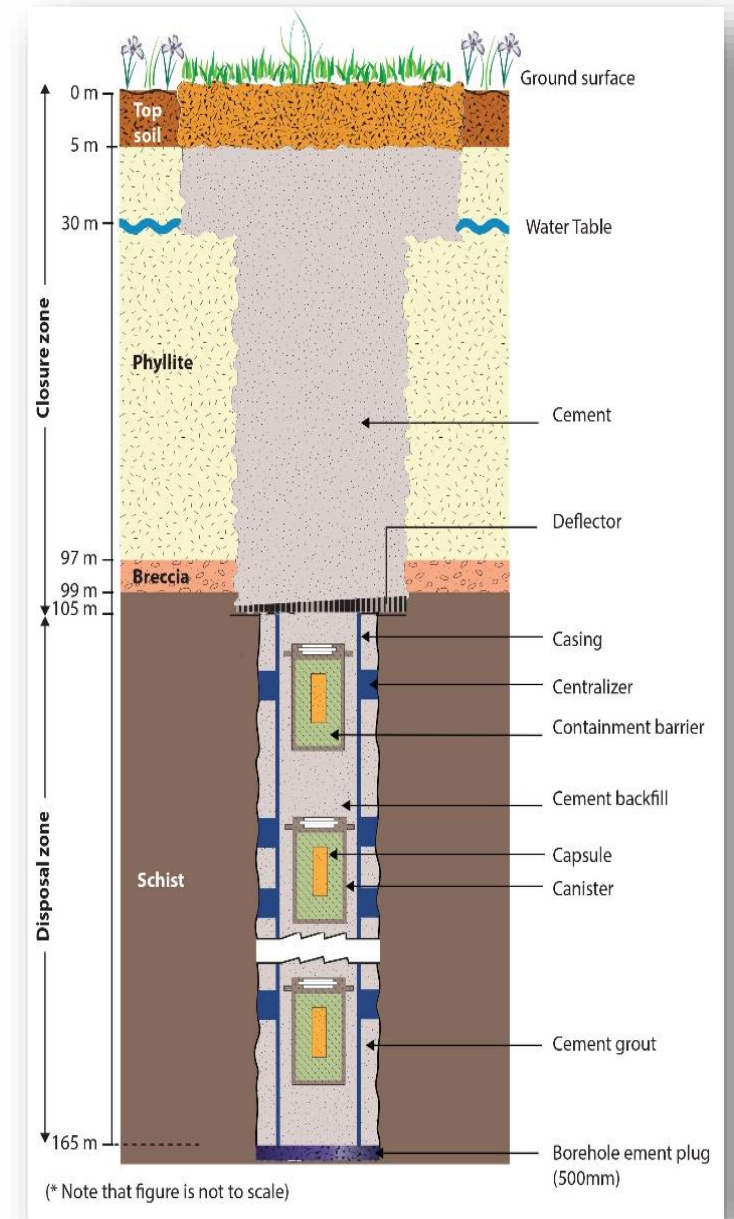


- OTHERS SLIDE IF NEEDED

TYPICAL SCHEMATIC DIAGRAM OF THE BOREHOLE DISPOSAL FACILITY

The BDF is a narrow diameter borehole (260mm) and entails emplacement of waste packages into a borehole repository. The borehole is plugged with cement at the bottom which is allowed to set before the first waste package is disposed of. Waste packages are lowered gently into the borehole using a winch. Cement backfill is poured and allowed to set before the next package is emplaced.

105 meter closure zone
60 meter disposal zone
60 waste packages



Schematic diagram of the BDF