

# Current Status on Safeguards Implementation in Malaysia

HASMADI HASSAN  
MONALIJA KOSTOR

Atomic Energy Licensing Board  
Ministry of Science, Technology & Innovation (MOSTI)  
Batu 24, Jalan Dengkil, 43800, Dengkil, Selangor



*Ensuring Safety, Security & Safeguarding Peaceful Nuclear Activities*

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- Atomic Energy Licensing Act 1984 (Act 304)
- Strategic Goods Act 2010 (Act 708)
- Safeguard Regime
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# *Introduction*

# Atomic Energy Licensing Board

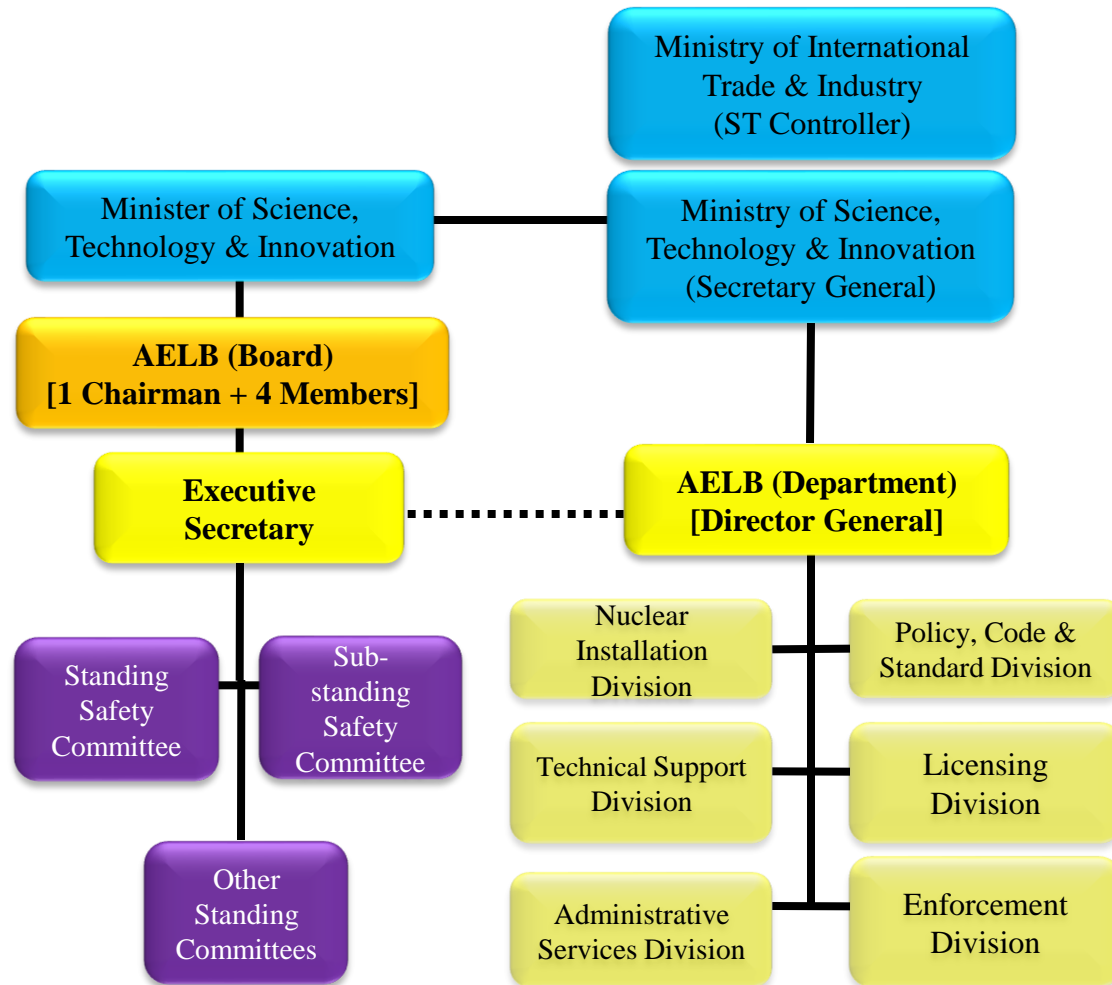
## Main Acts

Atomic Energy  
Licensing Act 1984  
(Act 304)  
&  
Strategic Trade Act  
2010  
(Act 708)

- To provide for the regulation and control of atomic energy, its technology and its trade.
- For the establishment of standards on liability for nuclear damage.
- For matters connected therewith or related thereto.

Regulatory Body  
& ST Relevant  
Authority

- AELB (Board) was established under Section 3 of the Act 304.
- Ensuring safety, security and safeguarding peaceful nuclear activities.



# Atomic Energy Licensing Board (AELB) Headquarters



Source: Google Earth



# AELB Branch Offices



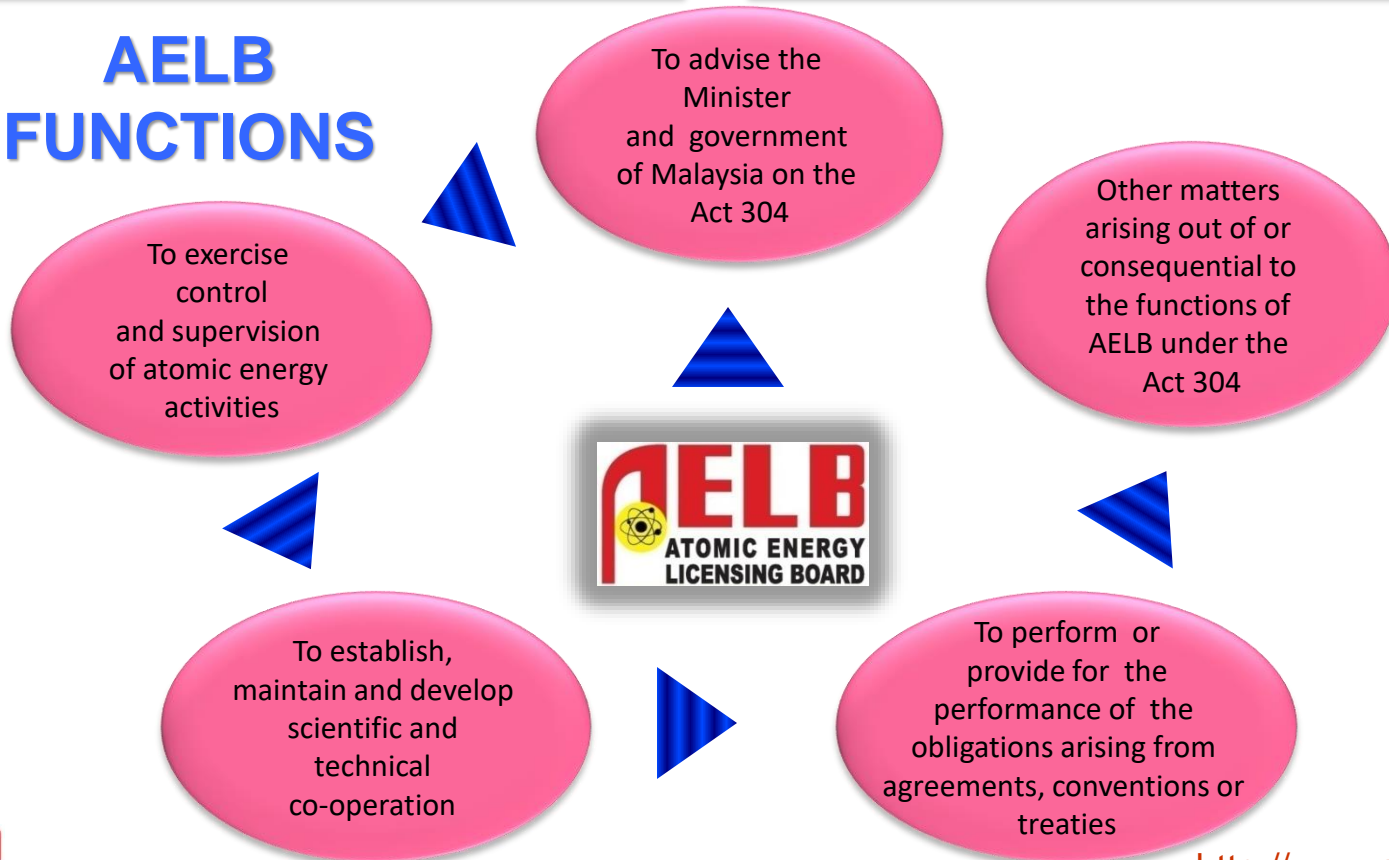
## MISSION

Encouraging innovation culture to ensure the safe and peaceful uses of radiation and nuclear technology

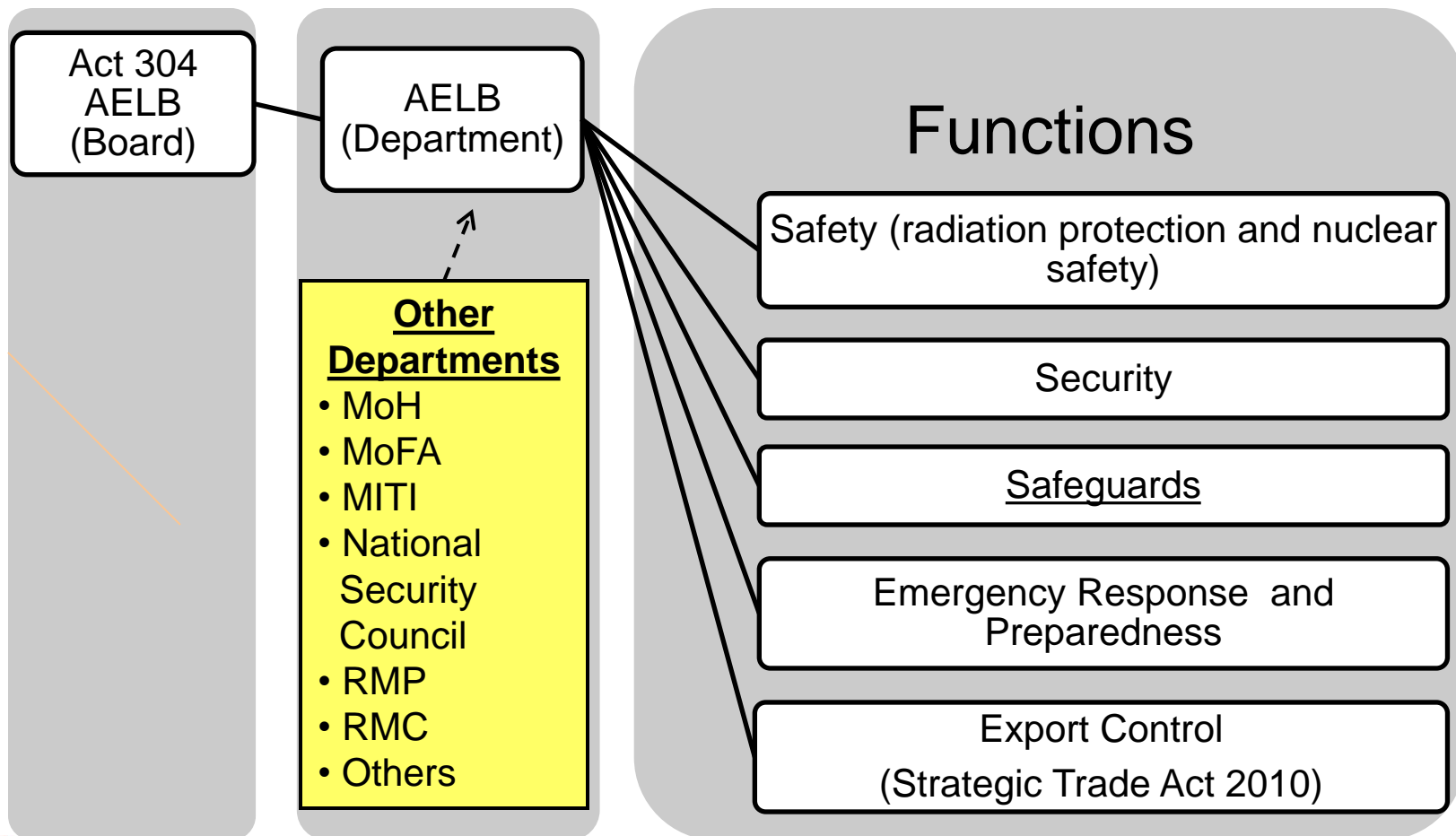
## VISION

Remaining a relevant regulatory authority with credibility in radiation and nuclear safety, security and safeguarding its peaceful uses for national sustainable development

## AELB FUNCTIONS



# Arrangement of National Collaboration





# Capability and Capacity: Safety, Security and Safeguards

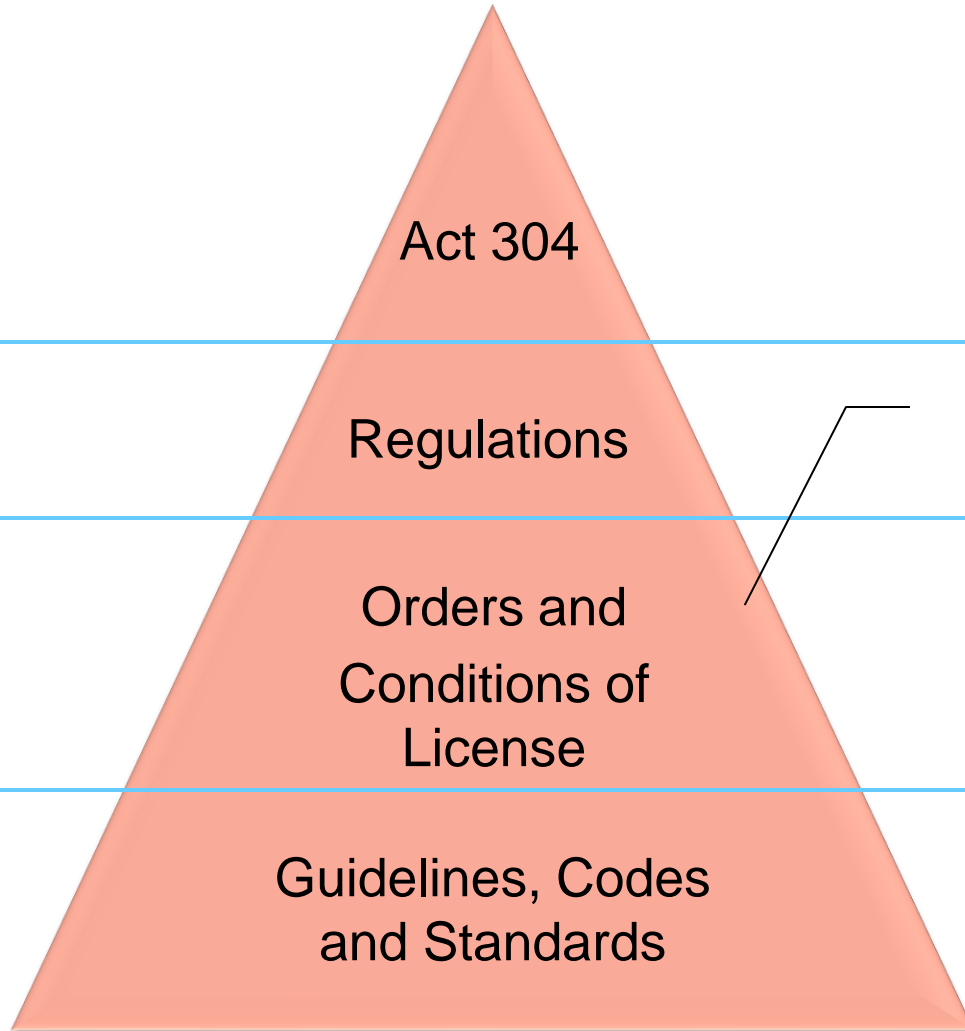
- Strong political position on non-proliferation.
- Established legal and regulatory framework.
- Security and safety enhancement infrastructure.
- Active national and international cooperation.



# *Atomic Energy Licensing Act*

## *1984*


# Hierarchy of Legislative System



- Act provides the basic law for regulation and control of atomic energy, for establishment of standards on liability for nuclear damage and for matters connected therewith or related thereto

**Additional Protocol  
requirements incorporated into  
the conditions of license**

- Provides additional requirements which are not stated in the Regulations or special matters related to provisions entrusted by the Act
- Provides guides, codes and standards to comply with and achieve goals imposed in the Act and Regulations



*Strategic Good Act 2010*  
*(Act 708)*

# Act 708

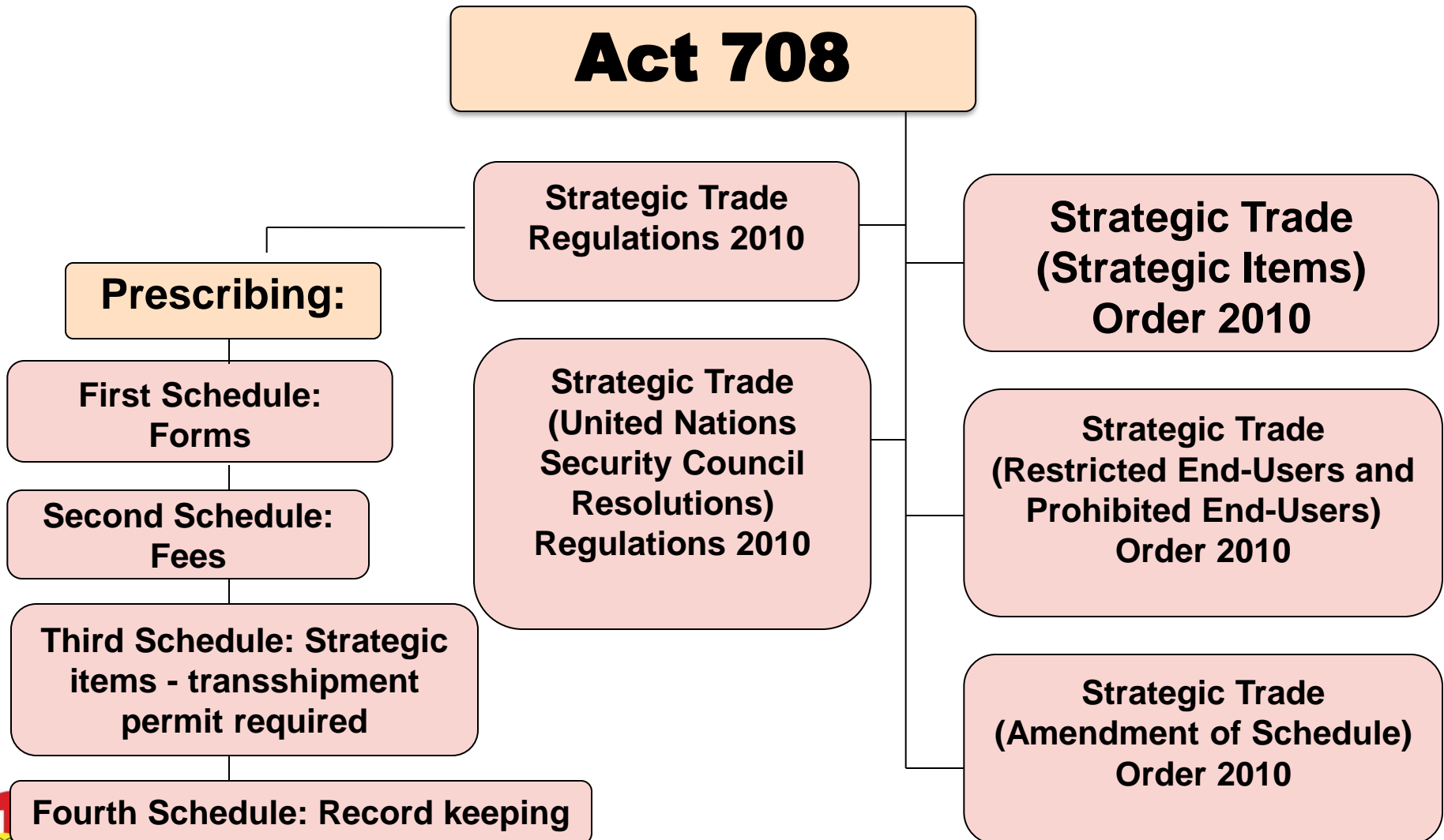
- Cabinet's approval - 26 March 2010
- Pass the Parliament - 5 April 2010
- Royal Assent - 2 June 2010
- Publication in the Gazette - 10 June 2010
- Gazette of Regulations and Orders - 31 Dec 2010

# Act 708

- Consistent with the international export control regimes for supporting the export control at the global market:
  - Wassenaar Arrangement (WA)
  - Missile Technology Control Regime (MTCR)
  - Nuclear Supplier's Group (NSG)
  - Australia Group (AG)
  - Zangger Committee (ZC)

# Regulations And Orders

(published in government gazette on 31 December 2010)



# Objective of Act 708

**C O N T R O L**

brokering

transit

export

transshipment

other activities

goods

**STRATEGIC ITEMS**

technology

**FACILITATE:**

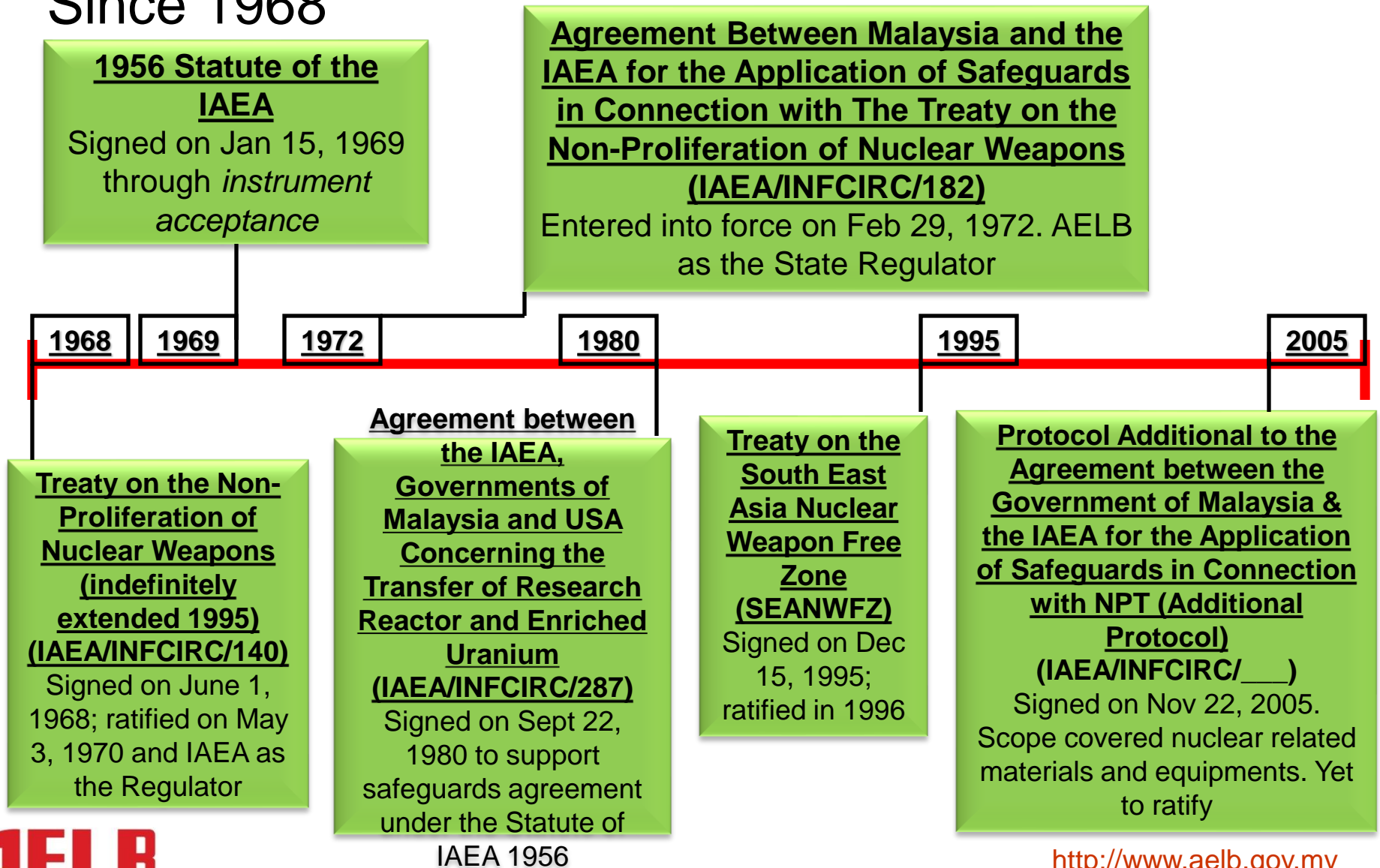
- design   - development   - production

**Weapons of Mass Destruction (WMD)  
& Delivery Systems**

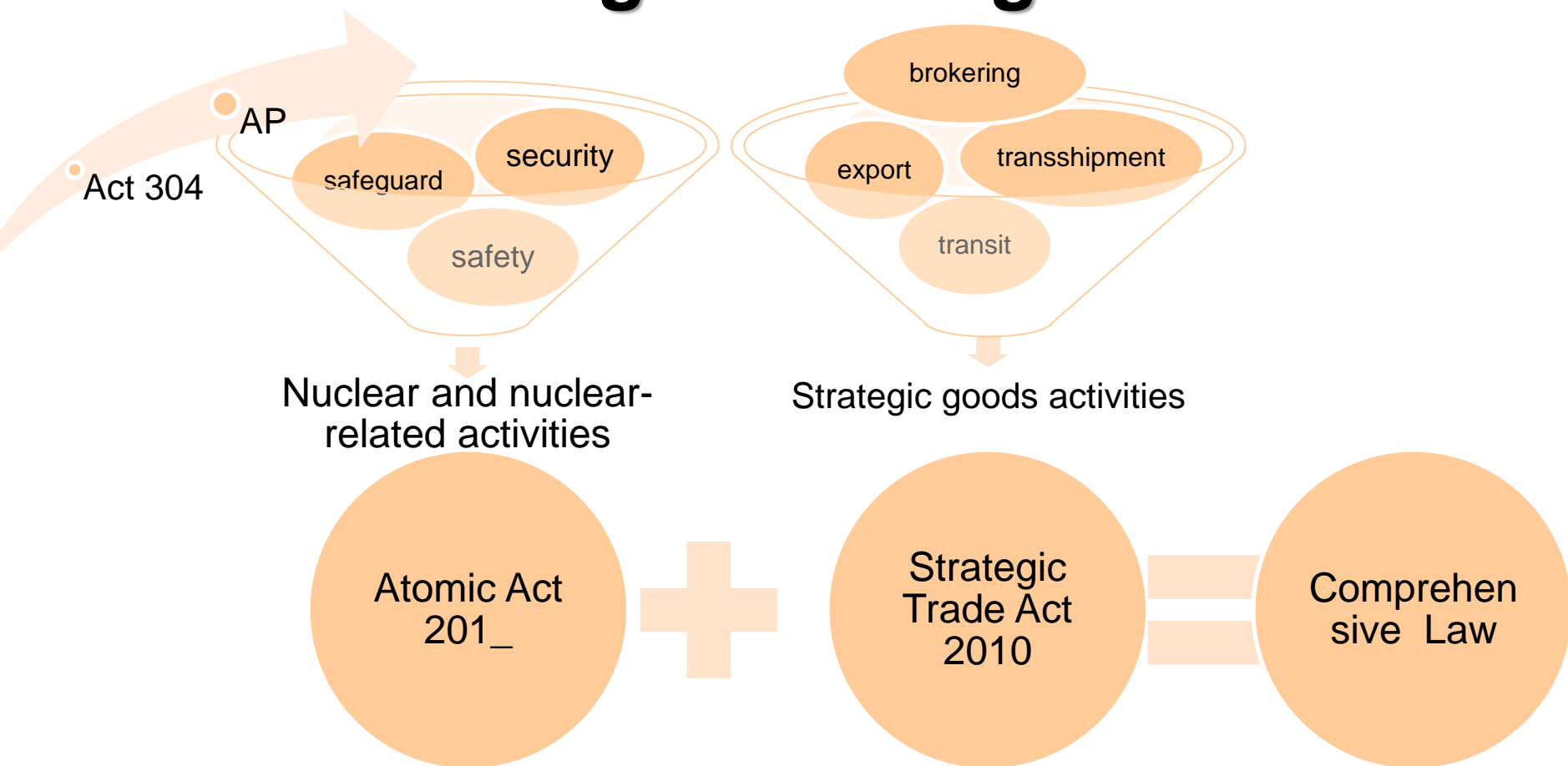


# *Safeguard Regime*

# Development of Safeguard System in Malaysia Since 1968



# Malaysian Approach on the NPT and Safeguards Regime



# *Additional Protocol (AP)*

# Malaysian AP

- Malaysia had signed the AP to the IAEA Safeguards Agreement on 22 Nov 2005 and the comprehensive safeguards agreement on the 29<sup>th</sup> Feb 1972.

# Malaysian AP: The outreach efforts

- First **awareness program on AP** for government agencies and industries was conducted on the **10<sup>th</sup> Dec 2007** as one of the concurrent event at the National Convention on Nuclear and Radioactive Materials Safety, Security and Safeguards.
- On the **30<sup>th</sup> March till 1<sup>st</sup> April 2009**, AELB with the expert assistance from the IAEA (ASNO and USDoE was part of the expert team) had organized a **National Training Course** for government officials.

# Malaysian AP: The outreach efforts

- The **industrial outreach awareness program** for industries, universities and research institutes by the experts from IAEA and ASNO was then organized on the **2<sup>nd</sup> April 2009**.
- **Workshop on the Implementation of the AP** was held on **2<sup>nd</sup> - 4<sup>th</sup> August 2010** by INSEP experts from the NNSA USDoE and the IAEA which involved AELB technical officers.

# Malaysian AP: The outreach efforts

- On the 9 - 12 Nov 2010, **Train the Trainers Workshop** (for developing the guidelines and training materials) was conducted for AELB technical officers by INSEP experts from the NNSA USDoE and the IAEA.
- The **AP Workshop** was then organized on the 16 - 18 June 2011 by INSEP experts from the NNSA USDoE and the IAEA which involved AELB, MoFA, Police and Attorney General's Chamber.



# Dedicated website for the purpose of AP Outreach to the Public

← → ↻ www.aelb.gov.my/npt/index\_files/Page469.htm



- Non-Proliferation Treaty
- Additional Protocol
- Seminar/Workshop
- Documents Download

## WORKSHOP/SEMINAR ON THE IMPLEMENTATION OF ADDITIONAL PROTOCOL IN MALAYSIA

### The updates of upcoming workshop and seminars

1. Workshop on the Implementation of the Additional Protocol in Malaysia for Government officers and relevant agencies.  
AELB Headquarters 30—1 April 2009  
Training material could be obtained [here](#).
2. Outreach Awareness Seminar On The Trade Facilitation of the Technologies/Equipments Under the Control of Additional Protocol.  
PICC 2 April 2009  
Relevant Material could be obtained [here](#).



Side view of the AELB Headquarters, Selangor

Upcoming workshop and seminar on Additional Protocol will be updated regularly.

www.aelb.gov.my/npt/index\_files/Page541.htm



## DOCUMENTS DOWNLOAD

List the products that your company offers. To add more products, copy and paste additional text boxes.

**Workshop Training Materials**  
Materials that is been presented during the workshop.

[Download here...](#)

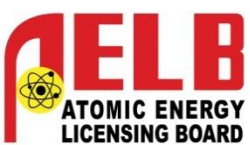
**Outreach Awareness Seminar Materials**  
Outreach Awareness Seminar materials.

[Download here...](#)

**Equipment and Technologies**  
A comprehensive list of Equipment and Technologies under the control of Additional Protocol. With pictures and details.

[Download here...](#)

**IAEA Documents related to Additional Protocol and NPT**  
All the documents published by the International Atomic Energy Agency that are related to the Additional Protocol.



<http://www.aelb.gov.my>  
<http://ansn.aelb.gov.my>

IAEA complementary access techniques may include visual observation, collection of environmental samples, utilization of radiation detection and measurement devices, examination of production and shipping records, and other agreed measures. Access techniques for uranium mines also may include item counting of nuclear material and non-destructive measurement and sampling.

**Managed Access:** Both the Additional Protocol and the Subsidiary Arrangement to the Protocol afford certain managed access rights to Malaysia in the event of complementary access. Managed Access means procedures implemented by the Malaysia Government prior to and during a complementary access at a location, to protect information or activities of direct national security significance, to prevent the dissemination of proliferation sensitive information, to meet environmental, health, safety, or physical protection requirements, or to protect proprietary or commercially sensitive information. Examples of managed access contained in the Subsidiary Arrangement include shredding or removing sensitive papers, shredding equipment, logging off computer systems, restricting safeguards instrumentation to the purpose of access, or giving only individual inspectors access to certain parts of the inspected location.

#### Methodology in Implementing the Additional Protocol

The Additional Protocol requires Malaysia to submit to the IAEA declarations pertaining to the aforementioned activities. Declaration timeliness differ according to the activity. Within 180 days of entry into force of the Malaysia Additional Protocol, Malaysia will submit an initial declaration to the IAEA. Malaysia is also required to provide updates of this information annually. Provision of information regarding exports of non-nuclear materials and equipment will be provided to the IAEA on a quarterly basis while imports of these items will be reported only upon request by the IAEA. Companies will be notified by AELB if they are required to report information pertaining to the import of these materials.

**Reports:** To reduce the reporting burden to industry, information required to be submitted to AELB will be kept to the minimum necessary to fulfill Malaysia treaty obligations. Additionally, AELB will employ "check-box" forms, where possible, for industry to use when compiling reports, thus minimizing the need for free-style writing. Reports will be submitted to AELB in paper format by fax, by mail or hand delivery/courier. After submitting initial reports, companies whose activities do not change from the previous calendar year will only need to submit a "no-changes" report, thereby reducing paperwork burdens.

**Complementary Access:** Based on discussions with the IAEA, Malaysia does not anticipate receiving more than a few instances of complementary access annually. AELB, however, will work with companies and the IAEA to clarify any questions or inconsistencies pertaining to declarations to prevent a possible complementary access.

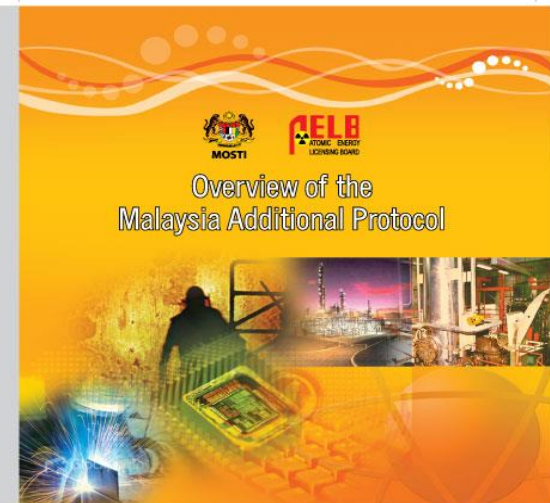
Should complementary access occur at an industry location, AELB will apply a methodology to assist the company in preparing for complementary access, as well as guide and expedite the access. This may include:

- Providing assistance visits to locations cost-free, upon request.
- Providing advance preparatory assistance to a location upon notification of complementary access.
- Escorting IAEA inspectors at all times during the access while on the grounds of a company and
- Coordinating with security countermeasures experts to protect sensitive information or technology.



#### Conclusion

For more information on the implementation of Malaysia Additional Protocol, the IAEA, and AELB's implementation of the Additional Protocol for Malaysia industry, please call Policy, Codes and Standard Division at 03-8926 7699 or visit [www.aelb.gov.my](http://www.aelb.gov.my)



# Brochure for the purpose of AP Outreach

## Introduction

The Additional Protocol to the Malaysia-International Atomic Energy Agency (IAEA) Safeguards Agreement (Malaysia Additional Protocol) is an additional aspect of the IAEA safeguards regime. The safeguards system dates back approximately thirty years, beginning with the Nuclear Non-Proliferation Treaty (NPT) in 1970, expanding to safeguards agreements concluded bilaterally between the IAEA and NPT-State Parties beginning in 1971, and now extending to individual NPT-State Party Additional Protocols. Based upon the Model Additional Protocol created by the IAEA, the Malaysia Additional Protocol was signed and agreed to on 22 November 2005 and soon to get the consent to ratification expected by this year 2010. Malaysia is currently in working towards domestic implementation of the Malaysia Additional Protocol.

The Additional Protocol broadens IAEA access beyond the provisions of the Safeguards Agreement, which covers nuclear material and specified equipment, to all aspects of the nuclear fuel cycle, which includes non-nuclear material and equipment and provides the IAEA access to both declared and undeclared locations. In contrast, the Safeguards Agreement only requires access to declared nuclear sites. This additional access is included to provide the IAEA assurance that a state's nuclear material and activities are consistent with its obligations under the NPT. The Atomic Energy Licensing Board (AELB), of the Ministry of Science, Technology and Innovation (MOSTI) will have a key role in implementing the Additional Protocol at commercial locations in the Malaysia.

### Origin of the Additional Protocol

Following the 1991 Persian Gulf War, international inspectors determined that Iraq had been engaged in a clandestine nuclear weapon development program at locations not subject to IAEA safeguards. To strengthen the safeguards system, the General Secretariat of the IAEA negotiated a Model Additional Protocol to amend existing bilateral arrangements. The Model Additional Protocol requires enhanced information collection and access at all declared commercial and other facilities conducting activities involved with the nuclear fuel cycle to provide IAEA inspectors with greater ability to detect clandestine nuclear activities in non-nuclear weapon states (NINWS).

### Provisions of the Malaysia Additional Protocol

Through the Malaysia Additional Protocol, the Malaysia accepts all measures contained in the Model Additional Protocol, except where their application would result in access by the IAEA to activities with direct national security significance to the country or to locations or information associated with such activities. Additionally, through a Subsidiary Arrangement concluded between the Malaysia and IAEA, the Malaysia can apply managed access procedures to protect confidential business information and other sensitive information from disclosure.

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**Scope / Subject Information and Activities:** Because the Malaysia Additional Protocol will cover all aspects of the civil nuclear fuel cycle, many locations engaged in purely commercial activities not involving nuclear material will be subject to the Protocol's provisions. In addition to "facilities" housing nuclear material, locations engaged in the following activities will be subject to the Additional Protocol declaration and access provisions:

- Public and private nuclear fuel cycle-related research and development not involving nuclear material,
- Information on "sites" where facilities are located,
- Manufacturing, assembly, or construction of nuclear fuel cycle-related equipment and non-nuclear material,
- Uranium and thorium mines and thorium concentration plants,
- Source material holdings and imports/exports,
- Non-nuclear, non-safeguarded waste processing,
- Import and export of non-nuclear equipment and material, and
- Plans for development of the nuclear fuel cycle in Malaysia.

AELB will have regulatory authority for the purposes of the Additional Protocol, activities within a "controlled" or "restricted" area. Specifically, AELB will also have to regulate private research and development activities not involving nuclear material, manufacturing of non-nuclear fuel cycle-related equipment and material, uranium, thorium, hard rock mining and ore beneficiation, and upon IAEA request, imports of nuclear equipment or non-nuclear material. The remainder of this section will pertain exclusively to these activities.

### Declaration Requirements:

The Additional Protocol requires Malaysia to submit to the IAEA declarations pertaining to the aforementioned activities. Declaration timeliness differ according to the activity. Within 180 days of entry into force of the Malaysia Additional Protocol, Malaysia will submit an initial declaration to the IAEA. Malaysia is also required to provide updates of this information annually. Provision of information regarding exports of non-nuclear materials and equipment will be provided to the IAEA on a quarterly basis while imports of these items will be reported only upon request by the IAEA. Companies will be notified by AELB if they are required to report information pertaining to the import of these materials.

Generally speaking, declarations on research and development activities will include a description of the project objective and activities, as well as the project level (e.g., theoretical analysis, experiment, demonstration). Specific manufacturing, assembly and construction activities subject to declaration requirements are listed in Annex I to the Additional Protocol. These activities include, for example, the manufacture of centrifuge rotor tubes, zirconium tubes, construction of hot cells, and the manufacture of nuclear grade graphite. Declarations pertaining to manufacturing will include their location, a description of the scale of operations, the type of manufacturing activities, and annual production capacity.

Declarations on mining activities will include the location (GPS coordinates and approximate street address), operational status and estimated annual production capacity of uranium, hard rock mines and ore beneficiation activities. Upon request from the IAEA, Malaysia will provide the current annual production of an individual mine. Malaysia will provide quarterly reports pertaining to the export of equipment or non-nuclear material specified in Annex II of the Additional Protocol. Information pertaining to the import of these materials would be provided only if specifically requested by the IAEA. The IAEA will only request import information in order to confirm a declared export of material or equipment to Malaysia from another State Party. Export and import declaration information will include the identity and quantity of the item exported/imported, location of intended use, and date of export/import into or out of Malaysia. In addition, upon IAEA request, Malaysia will provide amplification or clarification to any declared information pertaining to these activities.

**Complementary Access Provisions:** The Additional Protocol contains provisions for IAEA inspectors to access locations engaged in declared activities. This access is referred to as Complementary Access. Though the IAEA will not systematically verify declarations, it can seek access to locations for the specific purposes stated in the Additional Protocol. Mining activities are subject to a 24-hour advance notice. Prior to requesting access for activities other than mining, the IAEA will first provide Malaysia with an opportunity to clarify and facilitate resolution of a question or inconsistency pertaining to Malaysia's declaration, unless the IAEA determines that a delay in access would prejudice the purpose for which the access is sought. The IAEA will provide at least 24-hours notice prior to any complementary access. There are no time parameters established in the Protocol, but inspectors are required to work only during normal business hours, unless otherwise agreed.

The IAEA may request access to a research and development location, equipment / non-nuclear material manufacturer, or location importing monitored equipment in order to resolve a question or inconsistency relating to a declaration after a clarification request has been issued. Additionally, the IAEA may request access to a uranium mine in order to assure the absence of undeclared nuclear material or activities.

# Malaysian AP: The questionnaires

- In 2008, AELB had collaborated with the Federation of the Malaysian Manufacturer (FMM) to distribute the AP questionnaires to the FMM members on the production.
- Questionnaires were distributed to all the company which might produce equipment that may be listed in the Annex II of the AP.

# Questionnaires



LEMBAGA PERLESENAN TENAGA ATOM  
ATOMIC ENERGY LICENSING BOARD

QUESTIONNAIRES  
ADDITIONAL PROTOCOL REVIEWING

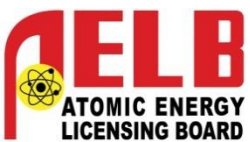
MANUFACTURING INDUSTRIES

DATE : \_\_\_\_\_



COMPANY NAME AND ADDRESS	Company : _____ Address : _____ Poskod : _____ _____
COMPANY CORE PRODUCT & BUSINESS	Brief Introduction: _____ _____ _____
DEPARTMENT	_____
HEAD OF DEPARTMENT	Name : _____ Contact number : Office : _____ HP: _____ Fax : _____
OFFICER IN CHARGE	Name : _____ Contact number : Office : _____ HP: _____ Fax : _____
ANY OTHER OFFICER IN CHARGE	

Category of Materials listed in ANNEX II	1	Capability of producing - Zirconium Tubes - Coolant pumps	<input type="checkbox"/> <input type="checkbox"/>
	2	Non-nuclear material - Deuterium and Heavy Water - High Grade Graphite	<input type="checkbox"/> <input type="checkbox"/>
* Please tick at the relevant facility and material that is being <u>used/produced/available/trade/kept/import and export or any others.</u>	3	Plants for the reprocessing of irradiated fuel elements, and equipment especially designed or prepared therefor - Irradiated fuel element chopping machines - Dissolvers - Solvent extractors and solvent <u>extration</u> equipment - Chemical holding or Storage vessels - Nitrate to oxide conversion system - Oxide to metal production system	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	4	Plants for the fabrication of fuel elements	<input type="checkbox"/>
	5.0	Gas centrifuges and assemblies and components especially designed or prepared for use in gas centrifuges	
	5.1.1	Rotating Components - Complete rotor assemblies - Rotor tubes - Rings or Bellows - Baffles - Top caps/Bottom caps	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	5.1.2	Static components - Magnetic suspension bearings - Bearings/Dampers - Molecular pumps - Motor stators - Centrifuge housing/ <u>reipients</u> - Scoops	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>



<http://www.aelb.gov.my>

<http://ansn.aelb.gov.my>

# Malaysian AP

- The consultation visit to the relevant companies in Malaysia is expected to end by Q3 2011.
- The completion of Training Protocol Reporter Draft by the end of 2011.
- Interagency meeting on Additional Protocol is expected to start in 2012.

# *Way Forwards*

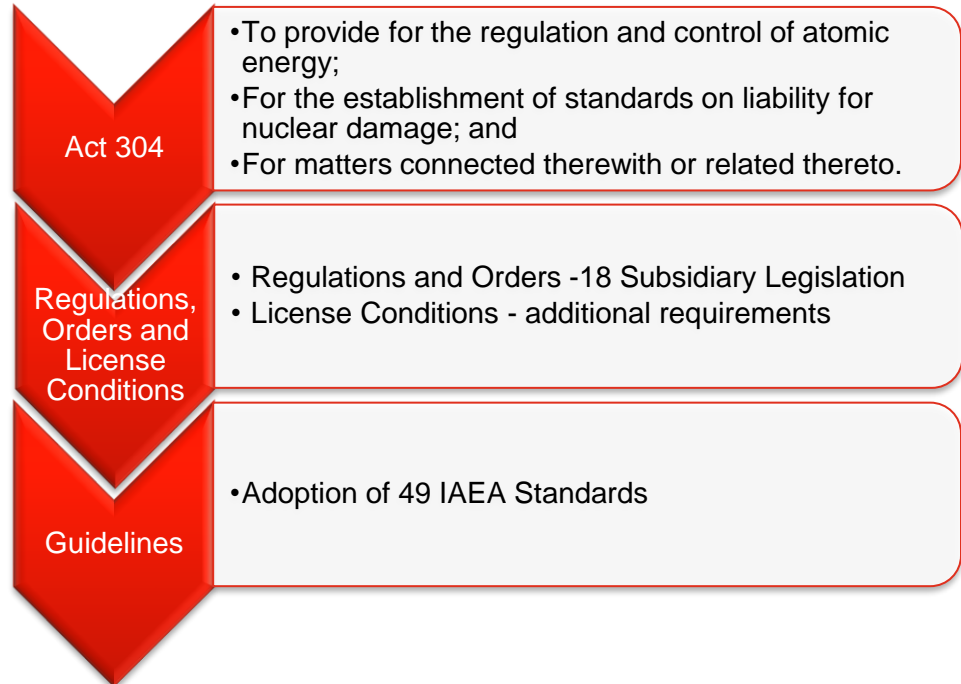
# RR TRIGA MARK II PUSPATI & Regulatory Control

## Operator: Malaysia Nuclear Agency

- Reactor type: TRIGA Mark II – Pool type reactor
- Reactor power: 1 MW thermal
- Start of installation: 9 Nov 1981
- First criticality: 28 June 1982
- Usage: neutron activation analysis(NAA), isotope production, neutron radiography, small angle neutron scattering (SANS), research purposes and education.



## Regulatory Body: AELB



Act 304,  
1984

- Atomic Energy Licensing (Basic Safety Radiation Protection) Regulations 2010
- Radiation Protection (Nuclear Installation Licensing) Regulations 201\_
- Radiation Protection (Radioactive Waste Management) Regulations 201\_
- Atomic Energy Licensing (Security of Radioactive Material) Regulations 201\_
- Atomic Energy Licensing (Security of Nuclear Materials) Regulations 201\_
- Atomic Energy Licensing (Safeguards Of Nuclear Activities) Regulations 201\_
- Radiation Protection (Medical Devices) Regulations 201\_
- Radiation Protection (Licensing) Regulations 1986
- Radiation Protection (Transport) Regulations 1989
- Radiation Protection (Appeal) Regulations 1990

- GS-G-1.6 Seismic Design and Qualification for NPP
- GS-G-3.3 Evaluation of Seismic Hazard for NPP
- GS-G-4.1 Format and Content of SAR for NPP
- NS-G-1.1 Software for Computer Based System Important to Safety in NPP
- NS-G-1.2 Safety Assessment and Verification for NPP
- NS-G-1.4 Design of Fuel Handling and Storage System For NPP
- NS-G-1.5 External Event Excluding Earthquake
- NS-G-1.7 Protection Against Internal Fires and Explosion In the Design of NPP
- NS-G-1.8 Design of Emergency Power System for NPP
- NS-G-1.9 Design of Reactor Coolant System and Associated System in NPP
- NS-G-1.10 Design of Reactor Containment System for NPP
- NS-R-1 Safety for NPP Design

- NS-G-1.11 Protection against Internal Hazard Other than Fire and Explosion Design of NPP
- NS-G-1.12 Design of Reactor Core for NPP
- NS-G-1.13 Radiation Protection Aspect of Design for NPP
- NS-G-2.1 Fire Safety in the Operation of NPP
- NS-G-2.2 Operation Limit & Condition and Operating Procedures For NPP
- NS-G-2.3 Modification to NPP
- NS-G-2.4 The Operating Organization for NPP
- NS-G-2.7 Radiation Protection and Radioactive Waste Management in the Operation of NPP
- NS-G-2.8 Recruitment, Qualification & Training of Personnel for NPP
- NS-G-2.9 Commissioning for NPP
- NS-G-2.10 Periodic Safety Review for NPP

- NS-G-2.11 A System for the Feedback of Experience From Events in Nuclear Installation
- NS-G-3.1 External Human Induce Event in Site Evaluation for NPP
- NS-G-3.2 Dispersion of Radioactive Material in Air and Water and Consideration of Population Distribution in Site Evaluation For NPP
- NS-G-3.5 Flood Hazard for NPP on Coastal and River Site
- NS-G-3.6 Geotechnical Aspect of Site Evaluation and Foundation for NPP
- WS-G-2.1 Decommissioning for Research Reactor and NPP
- NS-R-2 Safety of NPP Operation
- NS-R-3 Site Evaluation for Nuclear Installation
- NS-G-2.5 Core Management and Fuel Handling for NPP
- NS-G-3.4 Meteorological Event in Site Evaluation for NPP

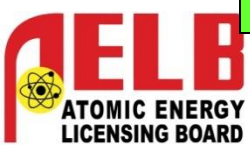
- National Guideline on Safety Assessment And Preparation of SAR
- Standard for Certification and Re-certification of RR Operator
- Guideline for Approval Application of Nuclear Material Transit
- Guideline for IAEA Safeguard Inspector Designation and Issuance of Multiple Entry Visa
- Guideline for Inspection Procedure For Research Reactors
- Guideline for Approval Application Of Transshipment of NM
- Standard for Certification of Inspector And Assessor
- Guidelines on Security of Radioactive Sources

Guidance Documents

- Guideline on the Site Evaluation For Nuclear Installation
- Guideline for Assessment of Reactor Modification
- Guideline on Nuclear Emergency Preparedness Program
- Guideline on Physical Protection of Nuclear Installation

**Petunjuk**

- Adopted by Board
- In Preparation/Drafting
- Under Planning
- In Revision
- Published
- Approved by Board





# Conclusions

- Malaysia notes the nuclear renaissance and nuclear terrorism related issues;
- Malaysia is committed to implementing safety, security and safeguards (3S's) measures;
- Malaysia is continuously enhancing capability and capacity in enhancing 3S's;
- Malaysia encourages transparency in nuclear safeguards matters;
- Malaysia believes in strong regional network and cooperation in promoting nuclear safeguards; and
- Malaysia believes regional human capital development is vital in ensuring effective implementation of nuclear safeguards initiatives.

*Thank You*



*Ensuring Safety, Security & Safeguarding Peaceful Nuclear Activities*