

Keselamatan – Tiada Tolak Ansur

Memastikan Kemudahan dan
Aktiviti Nuklear Malaysia Selamat

Safety – Uncompromised

Keeping Malaysia's Nuclear Activities and Facilities Safe





Kemudahan dan Aktiviti Nuklear Malaysia yang Selamat

Lembaga Perlesenan Tenaga Atom (AELB) telah mengawalselia sektor nuklear negara dan terus memperkukuhkan undang-undang tenaga atom, peraturan dan syarat-syarat perlesenan, dan juga memastikan pematuhan oleh pemegang-pemegang lesen. AELB menyelia penggunaan tenaga dan bahan-bahan nuklear untuk melindungi **kesihatan, keselamatan** dan **sekuriti** rakyat Malaysia dan **alam sekitar** negara serta membantu mengemudi pelaksanaan komitmen antarabangsa Malaysia mengenai **penggunaan tenaga nuklear untuk tujuan aman**. Sektor nuklear negara kita mempunyai rekod keselamatan yang cemerlang, dan kemudahan nuklear kita adalah antara yang paling selamat dan terjamin di rantau ini. Kejayaan ini sebahagian besarnya disebabkan oleh pegangan yang telah kami ambil iaitu **tidak bertolak ansur dalam soal keselamatan rakyat Malaysia dan negara** keseluruhannya. Kami juga sentiasa terus mendukung pernyataan Visi dan Misi kami:

Kenyataan Visi

Sentiasa relevan sebagai sebuah badan perundangan yang berwibawa dalam keselamatan, sinaran dan nuklear sekuriti dan serta kawalgunaan untuk secara aman bagi pembangunan mampan.

Kenyataan Misi

Menggalakkan budaya inovasi bagi memastikan penggunaan teknologi nuklear dan sinaran dengan aman dan selamat.



Keselamatan adalah Keutamaan Kami

Kami percaya ketelusan dalam menggunakan teknologi nuklear dan sinaran akan meningkatkan lagi keyakinan negara dan pihak antarabangsa di dalam keselamatan dan penggunaan secara aman dalam program nuklear kami. AELB berganding bahu dengan rangkaian organisasi antarabangsa seperti Agensi Tenaga Atom Antarabangsa (IAEA), Rangkaian Keselamatan Nuklear Asian (ANSN) dan rakan-rakan kerja global dari komuniti nuklear yang lain untuk memperkasakan lagi komitmen kami dalam menyumbang kepada **KEAMANAN DAN KESELAMATAN ANTARABANGSA**.





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- Sebuah Badan Penguatkuasa yang Berwibawa
- Lembaga AELB
- Pentadbiran AELB

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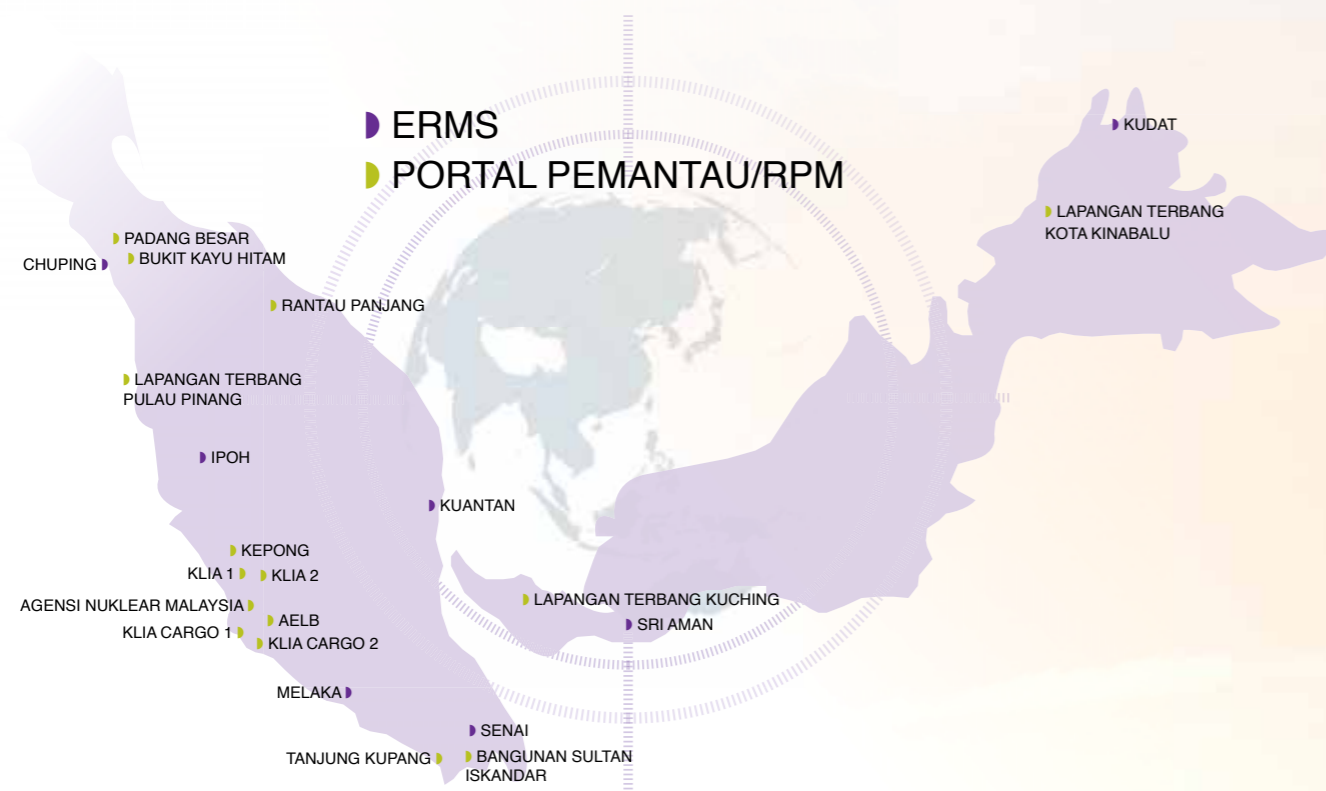
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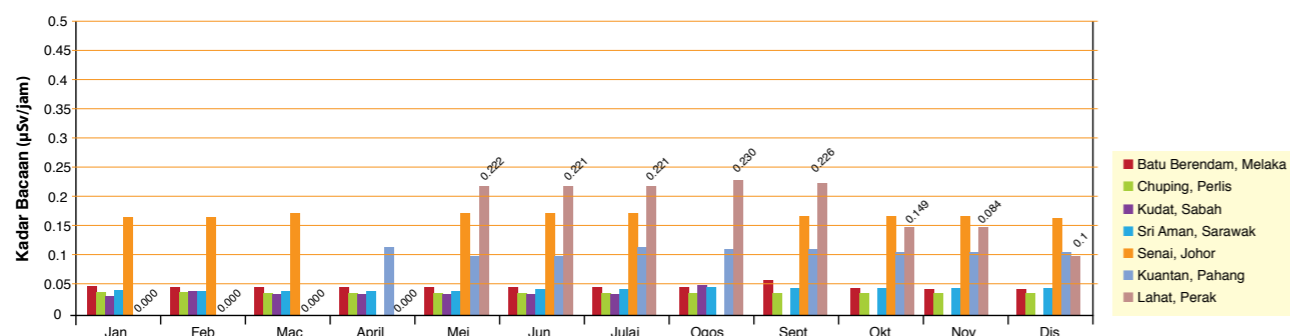
JABATAN AELB

Bertapak Kukuh Di Seluruh Negara

AELB adalah sebuah jabatan di bawah naungan Kementerian Sains, Teknologi dan Inovasi (MOSTI). AELB telah memainkan peranan yang penting dalam memelihara keselamatan dan sekuriti nuklear negara melalui penguatkuasaan, kawalgunaan dan kawalan yang efektif ke atas aktiviti tenaga atom negara. Lokasi-lokasi cawangan AELB yang berada di seluruh negara membantu peranan kami dalam memastikan SEKURITI dan KESELAMATAN nuklear negara. Ibu Pejabat AELB terletak di Dengkil, Selangor dan disokong empat Cawangan serta tujuh stesen pemantauan yang diletakkan di lokasi strategik di seluruh Malaysia. Keradioaktifan di dalam persekitaran dipantau dengan menggunakan Sistem Pemantauan Radiologi Persekitaran (ERMS). Untuk tujuan sekuriti nuklear negara, Portal Pemantauan Sinaran (RPM) dipasang dan diletakkan di pintu-pintu masuk negara untuk tujuan mengesan sinaran.



Purata Bacaan Bulanan ERMS di 7 Stesen bagi Tahun 2011



Ibu Pejabat

LEMBAGA PERLESENAN TENAGA ATOM (AELB)

Kementerian Sains, Teknologi dan Inovasi

Batu 24, Jalan Dengkil, 43800 Dengkil, Selangor

MALAYSIA

Tel: 603-8922 5888

Faks: 603-8922 3685

Laman web: www.aelb.gov.my

Pejabat Cawangan AELB

CAWANGAN UTARA (PULAU PINANG)

Lembaga Perlesenan Tenaga Atom

Kementerian Sains, Teknologi dan Inovasi

Cawangan Zon Utara (Pulau Pinang)

No. 29, Lorong Perda Selatan 1

Bandar Perda, 14000 Bukit Mertajam

Pulau Pinang

Tel: 04-539 8391/539 0486

Faks: 04-537 6380

CAWANGAN SELATAN (JOHOR)

Lembaga Perlesenan Tenaga Atom

Kementerian Sains, Teknologi dan Inovasi

Cawangan Zon Selatan (Johor)

No. 26, Jalan Sri Putra 1

Bandar Putra, 81000 Kulai

Johor

Tel: 07-663 2431/663 4300

Faks: 07-663 2409

CAWANGAN TIMUR (TERENGGANU)

Lembaga Perlesenan Tenaga Atom

Kementerian Sains, Teknologi dan Inovasi

Cawangan Zon Pantai Timur (Terengganu)

Pt 6980, Bukit Kuang Business Centre

24000 Kemaman, Terengganu

Tel: 09-850 3362/60

Faks: 09-850 3361

CAWANGAN SABAH & SARAWAK

Lembaga Perlesenan Tenaga Atom

Kementerian Sains, Teknologi dan Inovasi

Cawangan Zon Malaysia Timur

Sub Lot 13, Lots 2370 & 2371

Block 32, Kawasan Perindustrian Sibiyu

97000 Bintulu, Sarawak

Tel: 086-330 469/315 469/339 469

(Talian Terus ke Ketua Cawangan)

Faks: 086-332 469

Sebuah Badan Penguatkuasa Yang Berwibawa

AELB bekerjasama dengan pelbagai Kementerian, jabatan dan agensi Kerajaan yang lain untuk memastikan bahawa aktiviti berkaitan nuklear serta bahan-bahan dan kemudahan nuklear digunakan secara selamat dan terjamin di Malaysia. AELB juga bekerjasama dengan organisasi kebangsaan dan antarabangsa, termasuk pelbagai badan penguatkuasa untuk memenuhi mandat yang telah diamanahkan.

Ditubuhkan pada 1 Februari 1985, AELB membolehkan Kerajaan Malaysia mengawal, memeriksa dan menguatkuasa aktiviti tenaga atom negara secara efektif dan berkesan. Aktiviti tersebut meningkat dengan pesat pada tahun-tahun selepas 1968 apabila Kerajaan meluluskan Akta Bahan-bahan Radioaktif 1968 untuk mengawal penggunaan bahan radioaktif terutamanya di dalam bidang perubatan. Pada bulan April 1984, Parlimen Malaysia telah meluluskan Akta Perlesenan Tenaga Atom 1984 (Akta 304).

Pada peringkat awal Jabatan ini diletakkan di bawah Jabatan Perdana Menteri, dan di pertanggungjawabkan untuk melaksanakan fungsi mengikut Seksyen 3 Akta 304. Pada 27 Oktober 1990, AELB telah dipindahkan daripada Jabatan Perdana Menteri dan ditempatkan di bawah Kementerian Sains, Teknologi dan Inovasi (MOSTI). Kini, Akta 304 telah dinilai semula bagi memastikan kerelevanan dan keberkesannya berterusan dalam memenuhi keperluan semasa. Tahun 2011 menyaksikan AELB terus berkhidmat dengan cemerlang dalam melaksanakan fungsi, peranan dan komitmennya yang jelas, seperti berikut:

Fungsi

- ▶ Memberi nasihat kepada Menteri dan Kerajaan Malaysia atas perkara berkenaan dengan Akta Perlesenan Tenaga Atom 1984 dan perkembangan berkaitan terutamanya mengenai implikasi perkembangan tersebut bagi Malaysia.
- ▶ Mengawal dan mengawasi pengeluaran dan penggunaan tenaga atom dan perkara yang berkaitan dengannya.
- ▶ Menubuh, menyenggara dan membangunkan kerjasama saintifik dan teknikal dengan mana-mana badan, institusi atau organisasi lain berhubungan dengan perkara bersangkutan dengan nuklear atau tenaga atom sebagaimana difikirkan sesuai oleh Lembaga bagi maksud-maksud yang terkandung dalam Akta Perlesenan Tenaga Atom 1984.
- ▶ Melaksana sepertimana diarahkan sedemikian oleh Kerajaan Malaysia, bagi memenuhi obligasi yang timbul daripada perjanjian, konvensyen atau triti berhubungan dengan perkara-perkara nuklear atau tenaga atom yang mana Malaysia menjadi satu pihak jika perjanjian, konvensyen atau triti itu ada hubungan dengan maksud-maksud yang terkandung dalam Akta Perlesenan Tenaga Atom 1984.
- ▶ Mengerjakan perkara lain yang timbul atau berbangkit daripada fungsi-fungsi Lembaga AELB di bawah Akta Perlesenan Tenaga Atom 1984 yang tidak berlawanan dengan maksud-maksud yang terkandung dalam Akta ini, sama ada diarahkan oleh Menteri atau tidak.

Peranan

- ▶ Memastikan keberkesanan fungsi penguatkuasaan AELB.
- ▶ Mencapai tahap keberkesanan dan ketelusan yang tinggi dalam operasi AELB.
- ▶ Menarik dan mengekalkan kakitangan cemerlang yang mempunyai pengetahuan, kemahiran dan kecekapan yang diperlukan.
- ▶ Melaksanakan aktiviti AELB dengan tekun, termasuk seperti berikut:
 - Menyediakan peraturan, kod amali, standard, panduan dan nasihat.
 - Melesenkan penggunaan tenaga atom.
 - Melakukan pemeriksaan serta penguatkuasaan.
 - Menjalankan penyelidikan perundangan.
 - Melaksanakan kerjasama saintifik dan memenuhi obligasi di peringkat antarabangsa.
 - Menangani kecemasan nuklear dan radiologi.
 - Membangunkan budaya keselamatan.

Komitmen

- ▶ **Melindungi Sekuriti dan Keselamatan untuk Kesihatan dan Alam Sekitar**
 Dengan terbentuknya langkah-langkah dan keperluan peraturan SEKURITI berkaitan dengan bahan dan kemudahan nuklear, AELB dapat memastikan secara efektif bahawa semua pemegang lesen beroperasi secara selamat setiap masa agar dapat melindungi KESELAMATAN orang awam serta persekitaran. AELB juga memastikan peralatan sinaran bagi tujuan perubatan dan KESIHATAN sentiasa digunakan dalam keadaan yang selamat, dan dalam masa yang sama membantu melindungi ALAM SEKITAR melalui perundangan yang relevan berkaitan dengan bahan dan kemudahan nuklear.
- ▶ **Kawalgunaan Aktiviti Nuklear untuk Tujuan Aman**
 Dalam mengawalselia penggunaan tenaga dan teknologi nuklear untuk memastikan ianya hanya digunakan untuk tujuan aman semata-mata, sebarang rancangan jangka masa panjang Negara yang berkaitan dengan penggunaan tenaga nuklear dalam aktiviti aman yang lain akan sentiasa dipantau. AELB sentiasa memastikan komitmen dan sokongan negara terhadap Triti Ketakambahan (NPT) untuk Senjata Nuklear dan Perjanjian Kawalgunaan Agensi Tenaga Atom Antarabangsa (IAEA), termasuk kawalan eksport bahan dan teknologi nuklear. Malaysia, melalui jabatan AELB juga merupakan ahli kepada kawalan import/eksport bagi bahan dan kemudahan nuklear melalui perundangan negara.



Lembaga AELB



Ahli-Ahli Lembaga



1 YBhg Datuk Dr. Noor Hisham bin Abdullah
 Timbalan Ketua Pengarah (Perubatan),
 Kementerian Kesihatan Malaysia
 (16 Disember 2011 - 15 Disember 2014)

4 Y. Bhg. Prof. Madya Dr. Nahrul Khair Alang Md Rashid
 Pensyarah UIA
 (14 November 2011 - 13 November 2014)

2 YBhg Datuk Dr. Daud bin Mohamad
 Ketua Pengarah
 Agensi Nuklear Malaysia MOSTI
 (13 Oktober 2008 - 17 Oktober 2011)

5 Y. Bhg. Datuk Ir. Ahmad Fauzi Hasan
 Ketua Pegawai Eksekutif
 Suruhanjaya Tenaga
 (2 Julai 2010 - 1 Julai 2013)

3 YBhg Prof. Datin Paduka Dr. Khatijah binti Mohd. Yusoff
 Timbalan Ketua Setiausaha (Sains), MOSTI
 (1 Julai 2009 - 30 Jun 2012)

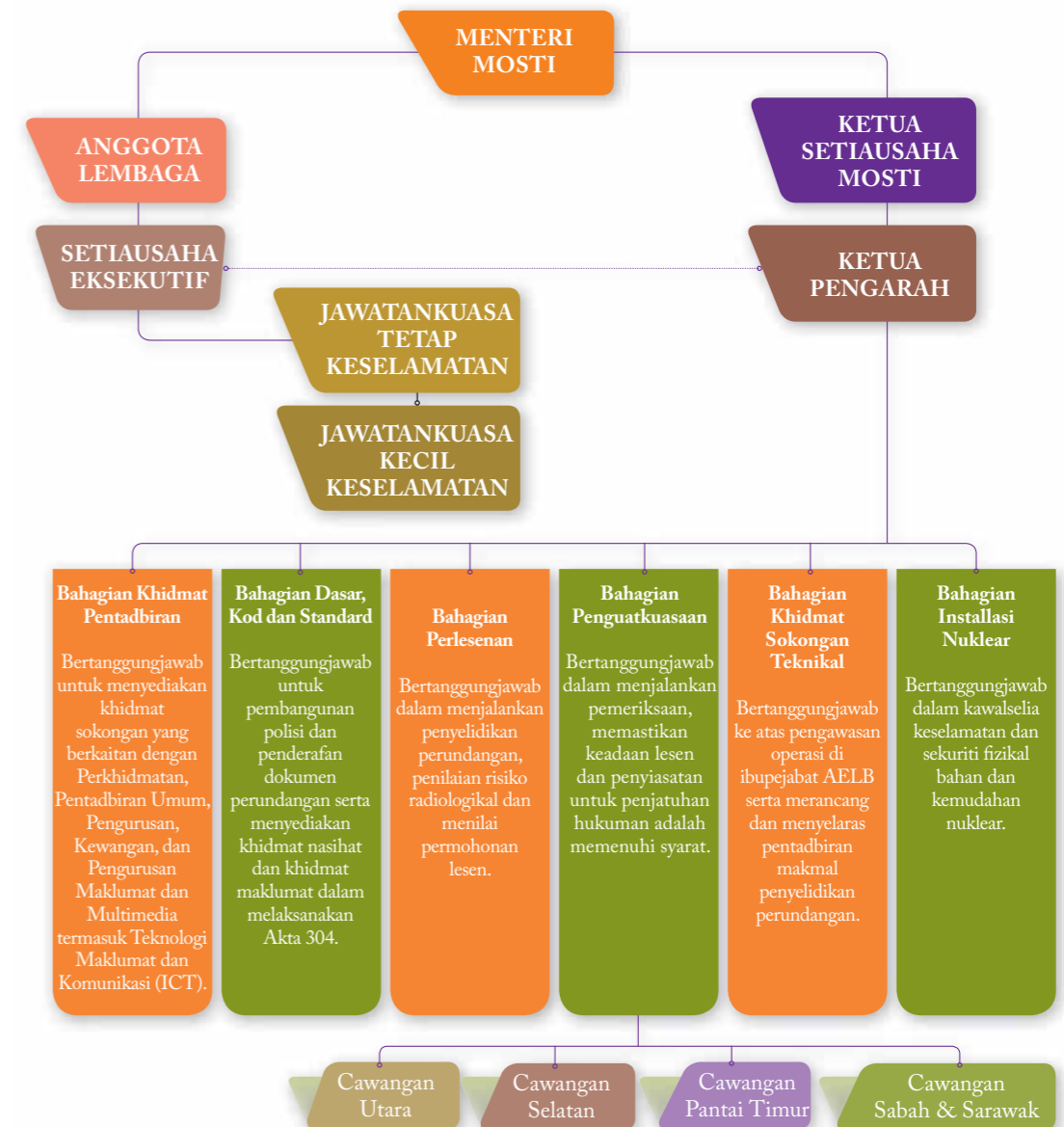


Pentadbiran AELB

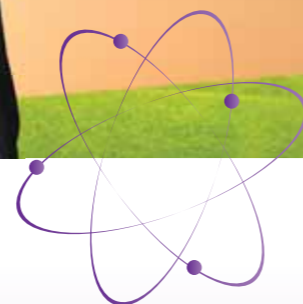
Lembaga AELB sebagai Pihak Berkuasa Berkaitan di bawah Akta 304 bertanggungjawab memberi nasihat kepada Menteri dan kerajaan Malaysia mengenai perkara berkaitan dengan Akta 304, mengawal penggunaan tenaga atom, menubuhkan kerjasama saintifik berkaitan tenaga atom, dan melaksanakan obligasi yang timbul daripada perjanjian, konvensyen atau triti antarabangsa yang berkaitan dengan penggunaan tenaga atom secara aman. Keputusan berkaitan polisi, pengurusan kewangan dan strategi dibuat oleh Lembaga AELB dan diluluskan oleh Menteri Sains, Teknologi dan Inovasi (MOSTI).

Diterajui oleh Ketua Pengarah, Jabatan AELB menjalankan operasinya menerusi pelbagai bahagian dan cawangan yang mempunyai tanggungjawab khusus di dalam perlesenan, pemeriksaan serta penguatkuasaan. Ketua Pengarah AELB melaksanakan program dan aktiviti yang berkaitan dengan perundangan Jabatan dan melaporkan kepada Ketua Setiausaha MOSTI.

Carta Organisasi



Sekalung Penghargaan



AELB sangat menghargai sepenuhnya sokongan padu yang berterusan dari Kerajaan Malaysia, Kementerian Sains, Teknologi dan Inovasi (MOSTI), lain-lain Kementerian, jabatan dan agensi Kerajaan, rakan-rakan sejawat antarabangsa dan industri.

Pihak pengurusan AELB ingin merakamkan penghargaan kepada semua kakitangan Jabatan AELB di atas komitmen dan dedikasi mereka dalam melaksanakan tugas dan tanggungjawab yang diberi serta membantu AELB mencapai matlamat yang membolehkan jabatan ini terus memikul tanggungjawab dan kekal sebagai satu badan penguatkuasa yang relevan, berkesan dan berwibawa.

Terima kasih di atas sokongan anda.

Laporan Operasi

Tahun 2011 menyaksikan AELB melalui fasa yang amat mencabar. Sejurus daripada kejadian gempa bumi dan tsunami besar yang melanda Jepun pada Mac 2011 dan telah mengakibatkan bencana kebocoran nuklear di Fukushima Daiichi, AELB telah dihujani dengan banyak persoalan daripada orang awam yang bimbang tentang keselamatan mereka dan kemungkinan berlakunya pencemaran radioaktif pada persekitaran.

Menerusi AELB, Majlis Keselamatan Negara (MKN) telah menggerakkan pasukan tindak balas kecemasan dan disokong oleh Agensi Nuklear Malaysia untuk menangani kebimbangan orang awam dan meningkatkan keyakinan mereka bahawa Kerajaan mengambil pendekatan yang sewajarnya untuk melindungi keselamatan orang awam. AELB telah menghantar beberapa pasukan ke beberapa lapangan terbang di seluruh negara untuk membantu dalam mengesan pencemaran terhadap penumpang dan barangan yang masuk ke dalam Malaysia. Aktiviti pengesanan pencemaran sinaran di lapangan terbang telah meningkatkan lagi tahap kesedaran awam di kalangan orang awam tentang peranan AELB di dalam memastikan keselamatan sinaran.

Kebimbangan orang awam juga telah dapat ditangani dengan kehadiran pegawai AELB untuk mengesan sinaran di pintu-pintu masuk negara. Pusat pengesanan sinaran juga telah dibuka di Ibu Pejabat AELB di Dengkil. Sistem Pemantauan Radiologi Persekitaran (ERMS) telah digunakan untuk memantau tahap sinaran alam sekitar di seluruh negara untuk membantu meredakan khabar angin yang mengatakan awan yang tercemar oleh radioaktif dari Jepun sedang bergerak menuju ke Malaysia. Pegawai dari Pasukan Bertindak Kecemasan telah bertugas di stesen pemantauan 24 jam/7 hari seminggu untuk memberi maklum balas harian secara berterusan kepada orang awam.

Siaran Akhbar turut dikeluarkan untuk memaklumkan kepada orang awam tentang tahap dedahan sinaran di Malaysia. Atas cadangan AELB, Kerajaan

Malaysia telah menghantar sekumpulan pegawai dari AELB dan Agensi Nuklear Malaysia ke Jepun untuk menentukan keperluan membawa balik rakyat Malaysia dari Jepun. Setelah membuat penilaian teliti dan mengadakan perbincangan dengan rakan sejawat Jepun dan badan-badan yang berkenaan, telah diputuskan bahawa pemindahan pulang-rakyat Malaysia adalah tidak perlu. Insiden bencana nuklear Fukushima Daiichi telah meningkatkan tahap kesedaran di kalangan orang awam tentang peranan, fungsi dan aktiviti yang dijalankan oleh AELB.

Satu lagi isu negara yang menarik perhatian orang awam adalah berkenaan pembinaan kilang nadir bumi Lynas di tapak perindustrian Gebeng berdekatan Kuantan. Perhatian orang awam sekali lagi tertumpu kepada projek kilang ini kerana tersebarannya khabar angin dan pertuduhan tidak berasas yang menyatakan bahawa kilang tersebut mengeluarkan risiko sinaran yang boleh membahayakan kesihatan orang awam dan persekitaran oleh pihak yang tidak bertanggungjawab. AELB telah menganjurkan taklimat di Kuantan untuk menangani persepsi ini dan meredakan kebimbangan serta kerisauan orang awam. AELB juga telah membuka satu pejabat sementara di kawasan tapak projek Lynas untuk memudahkan proses pemantauan aktiviti kilang Lynas.

AELB tidak akan bertolak ansur dalam isu keselamatan orang awam dan persekitaran. Permohonan awal Lynas Malaysia telah ditolak kerana tidak memenuhi beberapa syarat-syarat perundangan yang dinyatakan. Walau bagaimanapun permohonan Lynas telah diluluskan setelah Lynas memenuhi syarat-syarat tambahan yang ketat. AELB bertindak secara bebas dan berkecuali tanpa campur tangan dari mana-mana pihak, termasuk Kerajaan. Taraf professional AELB dapat dibuktikan dengan komposisi ahli Lembaga, yang mana tidak seorang pun dari ahlinya mempunyai konflik kepentingan yang boleh menjejaskan kewibawaan Jabatan, terutamanya dari segi hal pemberian kelulusan lesen dan keseluruhan prosedur pelaksanaan perkhidmatan dan dalam

membuat cadangan dan keputusan. Pengeluaran dan kelulusan lesen, termasuk kepada Lynas Malaysia, dibuat melalui penglibatan pelbagai agensi dan berdasarkan pada penilaian saintifik dan teknikal khususnya yang berhubung dengan keselamatan. Penilaian ini mengambil kira keperluan perundangan yang berkenaan, termasuk standard dan amalan antarabangsa.

Berikut adalah lain-lain perkara penting dalam operasi AELB pada tahun 2011:

Draf Bil Akta Tenaga Atom 201_

AELB terlibat dalam penyediaan draf bil Akta baru untuk menggantikan Akta Perlesenan Tenaga Atom 1984 yang ada sekarang. Pendrafan Akta baru ini sedang dibuat oleh seorang perunding antarabangsa yang bertugas di bawah arahan *Malaysia Nuclear Power Corporation* (MNPC).

Peraturan Perlesenan Tenaga Atom (Pengurusan Sisa Radioaktif) 2011

Peraturan Perlesenan Tenaga Atom (Pengurusan Sisa Radioaktif) 2011 telah diwartakan pada 16 Ogos 2011. Peraturan ini dikenakan terhadap semua aspek sisa radioaktif dan pengurusannya yang merangkumi pelbagai bidang dari perubatan, penyelidikan dan industri ke lain-lain kegunaan yang ditentukan oleh Lembaga AELB.

Pelaksanaan Akta Perdagangan Strategik 2010 (Akta 708)

Diluluskan oleh Parlimen Malaysia pada tahun lepas, Akta Perdagangan Strategik memperuntukkan kawalan ke atas eksport, pemindahan ke kapal, transit, pembrokeran barangan strategik termasuk senjata dan bahan-bahan berkenaan dan lain-lain aktiviti yang mungkin membantu pengeluaran dan penghantaran senjata pemusnah massal. Ia juga memberi peruntukan kepada lain-lain hal yang berkaitan, selaras dengan sekuriti negara dan obligasi antarabangsa. Di bawah Akta ini, AELB telah dilantik sebagai penguatkuasa untuk mengeluarkan permit untuk barangan di bawah kategori 0, iaitu bahan-bahan, kemudahan dan

peralatan nuklear, berkuatkuasa dari 1 Januari 2011. Para pegawai AELB juga diberi kuasa di bawah Seksyen 2 Akta 708 untuk melaksanakan aktiviti penguatkuasaan seperti yang ditetapkan dalam Akta ini.

Untuk memastikan pelaksanaan Akta 708, AELB telah menjalankan beberapa program seperti berikut:

- ▶ **Pembangunan Sistem ePermit di bawah Akta 708:** Semua permohonan permit dibuat atas talian *online* bermula pada 1 April 2011. Ini adalah sebahagian dari usaha memodenkan proses kerja kami yang meliputi permohonan lesen, kelulusan, pindaan dan pembaharuan. Pemegang-pemegang lesen sendiri juga telah melalui perubahan dan menerima khidmat atas talian *online* yang telah memudahkan proses pengeluaran lesen. AELB akan terus menilai sistem ePermit ini demi meningkatkan mutunya.
- ▶ **Perbincangan dua hala antara AELB dan Department of Energy (DoE) Amerika Syarikat:** Perbincangan dua hala mengenai pelaksanaan Akta 708 telah diadakan pada 25 Januari 2011. Perbincangan ini menyentuh pelaksanaan Akta secara keseluruhan, termasuk cadangan melaksanakan program kesedaran bersama, latihan pembangunan keupayaan dan pembangunan panduan dan prosedur yang berkenaan.
- ▶ **Bengkel tentang End Use – End User Licensing Analysis (EUEU) under Strategic Trade Act 2010 (Act 708):** Diadakan dari 25-27 Januari 2012, bengkel ini bertujuan melatih pekerja cara memproses permohonan eksport, transit dan pemindahan barangan strategik ke kapal.

Sistem Pengurusan Kualiti MS ISO 9001:2008

Pada 1 Julai 2011, AELB telah menerima pengiktirafan Sistem Pengurusan Kualiti MS ISO 9001:2008 dari SIRIM. Pengiktirafan ini ialah untuk perlesenan atas talian (*online*) dan sistem penguatkuasaan AELB yang dianugerahkan tanpa syarat dan sah selama satu tahun. Ini adalah satu kejayaan besar bagi AELB pada tahun 2011.

Perlantikan sebagai Pengerusi Nuclear Security Advisory Group IAEA

Pada tahun 2011, Ketua Pengarah AELB telah dilantik menjadi pengerusi *Nuclear Security Advisory Group* IAEA yang merupakan badan penguatkuasa tertinggi dalam standard keselamatan nuklear antarabangsa. Perlantikan ini yang berdasarkan kepakaran individu juga dianggap sebagai satu pengiktirafan terhadap kepakaran yang terdapat di Jabatan AELB.

Sumbangan kepada Ekonomi Negara

AELB terus menyumbang kepada ekonomi negara melalui pengeluaran lesen dan memudahkan kegunaan aman sumber dan teknologi nuklear dan tenaga atom. Pada tahun 2011, jumlah keseluruhan permohonan lesen, pengeluaran kelulusan, pengiktirafan Pegawai Perlindungan Sinaran (RPO) dan pendaftaran pekerja mencecah 8,485, di mana 6,678 atau 78.7% merupakan pengeluaran kelulusan, yang mana memperlihatkan kemajuan yang dicapai oleh industri nuklear dan tenaga atom Malaysia.

Usahasama Antarabangsa dan Tempatan

Usahasama dengan pihak luar di dalam dan luar negara membantu pertukaran pengetahuan dan kepakaran untuk membangunkan keupayaan program nuklear sejajar dengan standard dan amalan antarabangsa. Usahasama ini sangat penting dalam usaha Malaysia untuk membangunkan Loji Kuasa Nuklear (NPP) sendiri. Pada tahun 2011, AELB telah bekerjasama dengan banyak pihak yang relevan, terutamanya IAEA dan ramai lagi, termasuklah yang berikut:

- ▶ **Lawatan DoE Amerika Syarikat di bawah Global Threat Reduction Initiatives (GTRI)** Lima pakar DoE Amerika Syarikat yang terlibat dalam program GTRI telah melawat Malaysia dari 17-21 Januari 2011. Tujuan lawatan ialah untuk mengesah dan menilai peralatan sekuriti di bawah program GTRI yang telah dipasang di beberapa tempat. Antara tempat yang telah dilesenkan oleh AELB untuk pemasangan peralatan sekuriti dan yang telah dilawati oleh pakar DoE Amerika Syarikat ialah Universiti Kebangsaan Malaysia (UKM), Ansell Malaysia dan Isotron (M) Sdn Bhd. Pakar-pakar ini juga telah melawat tempat-tempat di bawah bidang kuasa Kementerian Kesihatan Malaysia.
- ▶ **Kerjasama dua Hala antara AELB dan National Nuclear Security Administration (NNSA)/DoE Amerika Syarikat** Selepas pertukaran surat hasrat (LoI) yang ditandatangani pada 25 Mac 2010 antara AELB dan NNSA/DoE Amerika Syarikat berkenaan kerjasama dua hala dalam bidang sinaran dan keselamatan dan sekuriti teknologi nuklear, beberapa perbincangan teknikal telah diadakan dalam tahun 2011. Perbincangan teknikal *State System of Accounting for and Control of Nuclear Material (SSAC) and Regulatory Development* telah diadakan dari 2-4 Mac 2011. Perbincangan ini bertujuan membuat penilaian bersama draf dokumen latihan untuk pindaan Akta 304, Akta Atom (Sekuriti) Peraturan 201_ dan Akta Atom (Pengawasan/*Non Proliferation*) Peraturan 201_.





Program latihan IAEA Norwegian - Capacity Building in Safety Assessment of Nuclear Power Plant.

Perbincangan ini juga menyemak skop kerjasama antara Jabatan AELB dan NNSA/DoE Amerika Syarikat, dan merangkumi SSAC, pembangunan modal insan dan kerjasama dalam membangunkan makmal kawalan.

Memorandum Persefahaman (MoU) antara AELB dan Japan Nuclear Energy Safety Organization (JNES)

Sempena dengan *Technical Support Organisation (TSO) Conference* bermula dari 1-5 November, 2010 di Jepun, AELB dan JNES telah membincangkan kemungkinan menandatangani kerjasama antara kedua pihak. Kedua-dua pihak sedang dalam proses mengenalpasti skop MoU ini sebelum menyiapkannya.

Lawatan Agensi Luar Negara ke AELB

AELB telah menjadi tuan rumah kepada lawatan delegasi agensi asing yang mahu menjalinkan hubungan dengan jabatan. Di antara agensi tersebut ialah:

- Tokyo Electric Power Services Co. (TEPCO)

Lawatan TEPCO, Japan pada 10 Januari 2011 dibuat oleh kerana agensi itu ingin mengetahui tentang program tenaga nuklear Malaysia dan ingin berkongsi pengalaman mereka di bidang nuklear.

- **IAEA Extra Budgetary Programme (EBP) tajaan Norway**
AELB menerima kunjungan pakar IAEA dari 13-14 Januari 2011 di bawah *Pilot Programme on Strengthening of Nuclear Safety Assessment Competence through the Global Safety Assessment Network (G-SAN)*. Melalui rangka kerja G-SAN, pihak EBP IAEA yang dibiayai oleh Norway ini akan:

- Menyokong negara-negara yang akan membangunkan program tenaga nuklear dari segi penilaian keperluan keselamatan nuklear.
- Menyokong negara ahli dalam membangunkan keupayaan penilaian keselamatan dan pengurusan maklumat.
- Memperkukuhkan perkongsian maklumat dan pengalaman tentang penilaian keselamatan.

- Kerjasama dengan Republik Slovakia

Lawatan ke Malaysia oleh Duta Republik Slovakia, Yang Berhormat En. Milan Lajciak pada 14 Februari 2011 dibuat untuk membincangkan kemungkinan menjalinkan kerjasama di antara Republik Slovakia dan Malaysia. Skop kerjasama telah dikenalpasti seperti berikut:

- Penilaian pemilihan tapak untuk perlesenan NPP.
- Program keyakinan awam.
- Pembangunan kepakaran melalui program penempatan pakar.
- Perkhidmatan pakar.
- Penempatan/pertukaran pegawai.
- Program pasca-siswazah dalam bidang kejuruteraan nuklear di Slovak University melalui cadangan akreditasi oleh Kementerian Pendidikan Tinggi Malaysia.

- **Japan Atomic Industrial Forum (JAIF)**
Lawatan oleh JAIF pada 25 Februari 2011 membincangkan kemungkinan menjalin kerjasama dalam membangunkan aktiviti-aktiviti nuklear di antara JAIF dan AELB.
- **Japan Atomic Energy Agency (JAEA)**
Lawatan oleh JAEA pada 7 Mac 2011 telah dibuat untuk membantu AELB dalam bidang Pembangunan Sumber Manusia Nuklear.

Latihan Anjuran AELB dengan Kerjasama Agensi Antarabangsa

International Radiological Assistance Training Programme for Emergency Responders (IRAPTER), 21-24 Februari 2011

Diadakan di Ibu Pejabat AELB dari 21-24 Februari 2011, dengan kerjasama NNSA/DoE Amerika Syarikat, IRAPTER bertujuan memberi latihan dan pendedahan tentang teknik mengesan bahan nuklear dan radioaktif dan cara untuk menyelaraskan tindakan-tindakan yang melibatkan pelbagai agensi penguatkuasa di Malaysia bertujuan mengesan bahan nuklear dan radioaktif di luar bidang kuasa. Ini sejajar dengan peranan AELB di bawah Arahan 20 Majlis Keselamatan Negara di mana AELB telah disebut sebagai badan yang bertanggungjawab ke atas kecemasan radiologi.

Bengkel Persediaan dan Tindakan Kecemasan Radiologi, 14-18 Mac 2011

Workshop on Radiological Emergency Preparedness and Response dianjurkan oleh AELB dengan kerjasama *Australia Nuclear Science & Technology Organization (ANSTO)*.

Bengkel Serantau tentang Sistem Pengawasan Nasional untuk Keselamatan, Sekuriti dan Kawalseliaan Nuklear

IAEA Workshop on National Regulatory System for Nuclear Safety, Security and Safeguards dianjurkan

oleh AELB dari 28 November – 2 Disember 2011. Berlangsung di Pusat Sains Negara, Kuala Lumpur, ia diadakan bersempena dengan Program Tahun Promosi Sains dan Matematik 2011 di bawah kelolaan MOSTI. Seramai 26 peserta antarabangsa dan 10 peserta tempatan telah menyertai bengkel ini.

Kursus Latihan Serantau (RTC) tentang Keselamatan dalam Pengangkutan Bahan-bahan Radioaktif

Kursus yang diadakan dari 4-8 Julai 2011 di Hotel Royale Bintang, Kuala Lumpur telah dianjurkan oleh AELB dengan kerjasama IAEA.

RTC tentang Komunikasi Awam

Kursus yang diadakan dari 11-15 Julai 2011 di Hotel Royale Bintang, Kuala Lumpur ini adalah anjuran AELB dengan kerjasama IAEA.

Penempatan Pegawai Kontrak dari Korea Institute of Nuclear Safety (KINS) sebagai Sebahagian dari Pelaksanaan Perjanjian antara AELB dan KINS

Seorang pegawai dari KINS Dr. Young Joon Choi, pemegang PhD Kejuruteraan Nuklear dari KAIST (*Korea Advanced Institute of Science and Technology*) telah memulakan tugas sebagai Pegawai Kontrak Gred C48 di Bahagian Installasi Nuklear, AELB selama tiga bulan bermula 1 Ogos – 30 Oktober 2011.

Pembangunan Modal Insan

AELB terus membangunkan kecekapan pekerja menerusi pelbagai program latihan, kursus, seminar, bengkel, taklimat, ceramah, lawatan pakar dan perbincangan di peringkat antarabangsa dan tempatan. Para pekerja digalakkan melanjutkan pelajaran di peringkat Sarjana Muda, Sarjana dan Kedoktoran (PhD) di dalam dan di luar negara. Pelbagai aktiviti pembangunan insan dijalankan untuk membolehkan pekerja mendapat pendedahan, pengetahuan dan kemahiran yang diperlukan.

Isu Dan Cabaran Masa Hadapan

Bencana nuklear di Fukushima Daiichi dan isu berkaitan projek Lynas telah membuka peluang kepada jabatan AELB untuk menjadi lebih telus dan terbuka dalam semua aktiviti serta sentiasa bersedia untuk memberi maklumat yang perlu diketahui oleh orang awam. Oleh itu, kami telah membentuk Jawatankuasa Perundingan Awam untuk mengendalikan semua komen awam dan membuat cadangan berdasarkan komen yang diterima untuk perhatian pihak Lembaga AELB.

Peristiwa-peristiwa ini telah menyedarkan badan penguatkuasa untuk menyediakan kakitangan professional yang berkemahiran tinggi serta kompeten. Cabaran yang dihadapi dalam menangani kebimbangan orang awam serta pihak yang berkepentingan telah menjadi pengalaman yang sangat berharga dan ini dapat membantu kami untuk bersiap-sedia dalam menghadapi cabaran di masa hadapan selaras dengan matlamat program Transformasi Kerajaan Malaysia.

Masa hadapan industri tenaga atom Negara menunjukkan perkembangan yang positif memandangkan jumlah permohonan lesen telah meningkat dengan kadar yang sihat pada tahun lepas. Begitu juga dengan pembangunan sains nuklear dan teknologi yang berkembang pesat dalam pelbagai sektor ekonomi termasuk pertanian dan kesihatan.

Sedang Negara bergerak maju dalam usaha menjadi sebuah negara industri, dijangkakan teknologi baru akan sentiasa muncul termasuk teknologi yang mampu membawa risiko radiologi sekiranya tidak dipantau dan dikawalselia dari segi aspek sekuriti, keselamatan dan kawalgunaan. Bagi memastikan tahap kompetensi yang tinggi, penguatkuasaan yang efektif dan kesediaan dalam menghadapi sebarang insiden, AELB akan memastikan orang awam serta alam sekitar sentiasa dilindungi dan selamat dari sebarang pencemaran radiologi.

Malaysia mempunyai rekod keselamatan sinaran yang sangat baik sejak lebih dari 30 tahun dahulu. Setakat ini, tiada lagi kes yang melibatkan kemalangan nuklear di Malaysia atau kes penyalahgunaan bahan nuklear oleh pihak yang tidak berkenaan dilaporkan berlaku melainkan kes ringan yang tidak meninggalkan sebarang kesan radiologi. Ini mengesahkan sistem perundangan yang sedia ada adalah berkesan dan penguatkuasaan peraturan serta perundangan yang dilaksanakan adalah sangat tegas.

Pelan Strategik Untuk Tahun 2011 – 2015

Misi Nasional merangkumi tempoh 2011-2015 dan Rancangan Malaysia ke-10 (2011-2015) menyediakan konteks yang diperlukan bagi merangka teras strategik dan pelan tindakan AELB. Dalam konteks agenda pembangunan nasional dan untuk memastikan bahawa AELB memenuhi keperluan Kerajaan dan negara, lima Bidang Hasil Utama (KRA) telah dikenalpasti:



Bengkel 'Orphan Source Search Kuala Lumpur'.



Para peserta membuat praktikal untuk bengkel 'Orphan Source Search Kuala Lumpur'.

- Infrastruktur pentadbiran dan perundangan untuk sinaran dan keselamatan, sekuriti dan kawalgunaan nuklear.
- Kawalan dan penyeliaan.
- Kerjasama nasional dan antarabangsa.
- Modal insan.
- Pengurusan pengetahuan.

Teras strategik (ST) yang telah dikenalpasti di bawah Pelan Strategik untuk tahun 2011-2015 ialah:

ST1: Pengukuhan terhadap rangka kerja kawalan perundangan yang berkesan untuk sinaran dan keselamatan, sekuriti dan kawalgunaan nuklear, termasuk sebuah badan penguatkuasa yang bebas dan berkecuali.

Pelan tindakan termasuk:

- Pembangunan dokumen-dokumen panduan baru:
 - Panduan permohonan lesen berkaitan dengan Pusat Pengurusan Sisa Radioaktif Nasional.
 - Senarai rujukan berkaitan dengan kemudahan nasional untuk menghapuskan sisa radioaktif.
 - Panduan perantaraan tugas dan tanggungjawab berkenaan dengan Penasihat Perlindungan Sinaran (RPA).
 - Panduan permohonan lesen berkaitan dengan makmal kalibrasi.
- Pelaksanaan peraturan perlesenan instalasi nuklear.



Pakar LAEA dan Risk Spectrum.

- Pendrafan dan penyerahan standard penerimaan dan pengesahan kod atau standard untuk reka bentuk dan pembinaan NPP.
- Pelaksanaan penuh Akta-akta baru termasuk Akta Perlesenan Tenaga Atom 1984 (Akta 304)/ Bil Akta Atom 201_, Perlesenan Tenaga Atom (Pengurusan Sisa Radioaktif) Peraturan 201_ dan Perlesenan Tenaga Atom (Pengangkutan) Peraturan 201_, kesemuanya akan siap pada tahun 2015.

ST2: Kerjasama yang berkesan dan penyertaan cergas di peringkat nasional dan antarabangsa dalam isu teknikal dan polisi sinaran dan keselamatan, sekuriti dan kawalgunaan nuklear.

Pelan tindakan termasuk:

- Mengadakan program kesedaran keselamatan untuk pemegang lesen, pekerja sinaran dan komuniti.
- Memperkukuhkan infrastruktur keselamatan, sekuriti dan kawalgunaan melalui pengurusan yang berkesan dan pelaksanaan EBP untuk keselamatan nuklear.
- Meningkatkan lagi program kesedaran awam.
- Menjalankan penyelidikan biosimetri.
- Menandatangani surat hasrat (LoI) dengan NNSA/DoA.

ST3: Pengukuhan mekanisme penyeliaan terhadap pematuhan pemegang lesen kepada syarat-syarat kawalseliaan dan kepuasan pelanggan demi menyokong pertumbuhan ekonomi nasional.

Pelan tindakan termasuk:

- Memproses permohonan atas talian (*online*) dan menyemak dokumen-dokumen sokongan yang diserahkan oleh pemohon, menjalankan kajian selidik kepuasan pelanggan, membangunkan Piagam Pelanggan yang baru untuk proses permohonan lesen untuk tujuan penyelidikan reaktor nuklear. (Catatan: Piagam Pelanggan untuk permohonan lesen telah digunakan) dan menjalankan penyelidikan kawalselia dengan tujuan berikut:

- Penentuan pembuangan sisa radioaktif nasional (EIA/RIA untuk kajian NORM dan TENORM).
- Kajian tentang arang batu dan komposisi radiologi produk berkaitan.
- Kajian tentang produk konsumer.
- Menjalankan pemeriksaan yang kerap ke atas kemudahan reaktor penyelidikan untuk memastikan pematuhan kemudahan reaktor penyelidikan kepada pelaksanaan syarat perlesenan.
- Melaksanakan program perlindungan sinaran dan menjalankan pengambilan sampel alam sekitar untuk pemantauan radiologi.
- Membina garis panduan dan prosedur Akta 708 dan Akta 304.

ST4: Pengukuhan perancangan yang berkesan berkenaan persediaan dan tindakan kecemasan untuk sinaran dan peristiwa dan kemalangan nuklear.

Pelan tindakan termasuk:

- Memastikan pemantauan dan peralatan makmal ada tersedia pada masa yang diperlukan.
- Meluluskan dokumen-dokumen yang relevan melalui audit forum.

ST5: Membangunkan keupayaan dan kebolehan infrastruktur kawalselia sinaran dan nuklear dan modal insan.

Pelan tindakan termasuk:

- Memastikan pelaksanaan licin sistem permohonan atas talian (*online*).
- Menghadiri kursus teknikal dan bukan teknikal di peringkat nasional dan antarabangsa.
- Membangunkan makmal NDA.
- Menyiapkan latihan berkomputer kecekapan mampan pegawai.

ST6: Perlindungan dan jaminan hak tetap untuk membangunkan teknologi nuklear secara selamat dan terkawal untuk tujuan aman di Malaysia dan memupuk keyakinan awam terhadap kegunaan aman sinaran dan teknologi nuklear.



Kursus MEST (Mobile Expert Support Team) Train for Trainers dengan kerjasama pihak KASTAM DiRaja Malaysia.



Kakitangan AELB sebagai MEST dengan peralatan pengesanan Identifinder berbincang dengan pihak KASTAM (FLO-Front Line Officer).

Pelan tindakan termasuk:

- Memperuntukkan/menarik balik pemeriksa kawalselia IAEA melalui penilaian kecekapan.
- Menubuhkan Sistem Pemantauan Radialogi Nasional untuk membantu lain-lain agensi penguatkuasa dalam mengesan tahap pencemaran dan pengedaran haram bahan nuklear dan radioaktif demi keselamatan nasional.
- Mengesahkan protokol tambahan terhadap perjanjian kawalselia menyeluruh dengan IAEA.

AELB akan senantiasa menyemak pelan tindakan dan mempertingkatkan tahap proses kerja supaya kami kekal sebagai sebuah badan penguatkuasa yang sangat

berkesan. Setiap bahagian di AELB akan menerajui pelaksanaan pelan tindakan bahagian masing-masing seperti yang digariskan di bawah Pelan Tindakan lima tahun (2011-2015). Kami juga akan terus mendukung standard dan memenuhi obligasi antarabangsa untuk memastikan keselamatan dan sekuriti negara.

Dikeluarkan oleh
Pejabat Setiausaha Eksekutif AELB



SAFETY – UNCOMPROMISED

Keeping Malaysia's Nuclear Activities and Facilities Safe

annual report **2011**



Safe Malaysian Nuclear Activities and Facilities

The Atomic Energy Licensing Board (AELB) has been regulating Malaysia's peaceful uses of atomic and nuclear technology in many fields such as medical, security screening, agriculture and food, industrial applications, environmental protection, radioactive waste management and scientific research since its establishment 26 years ago. In carrying out its mandate to oversee the safe and secure use of these applications, in concomitance with national laws and international safety standards as well as the country's international obligations, the AELB is ensuring that the public and the environment are protected from undue radiation risks.

Even though Malaysia's nuclear safety record has been excellent and our nuclear facilities among the safest and most secure in the region, thanks to our non-compromising position with regard the upholding of safety principles, we will not fall into complacency. We believe in the continuous strengthening of our atomic energy laws, regulations and licensing requirements and in this regard, continue to hold strongly onto our Vision and Mission.

Vision Statement

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

Mission Statement

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



Safety is Our Priority

By adhering to national and international nuclear laws and standards and by making safety our No. 1 priority, we help to keep the country **SAFE, SECURE and SAFEGUARDED**.

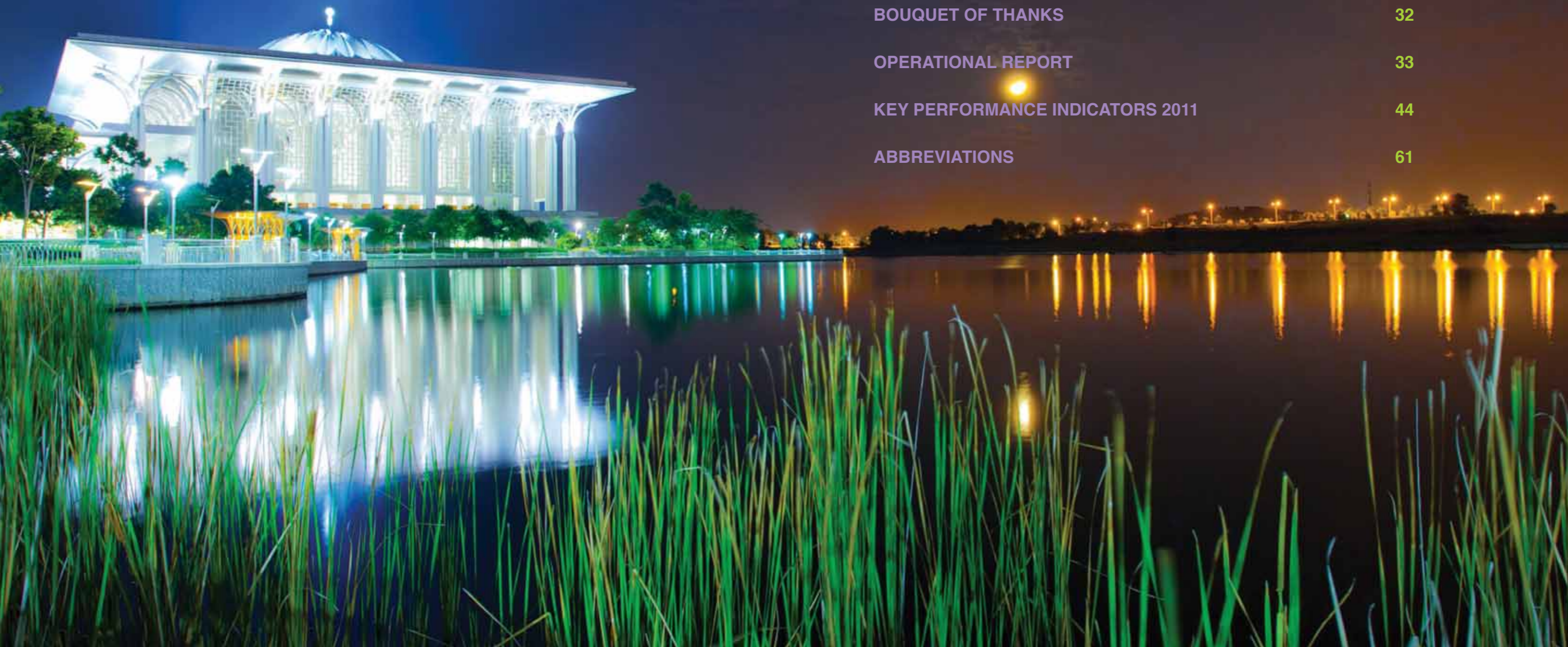
We believe that transparency in the use of radiation and nuclear technology will boost national and international confidence in the safe and peaceful nature of our nuclear programme. Our strong alliances with international organisations and networks such as the International Atomic Energy Agency (IAEA), the Asian Nuclear Safety Network (ANSN) and other counterparts within the nuclear community demonstrate our commitment to contribute towards **GLOBAL SAFETY AND INTERNATIONAL SECURITY**.





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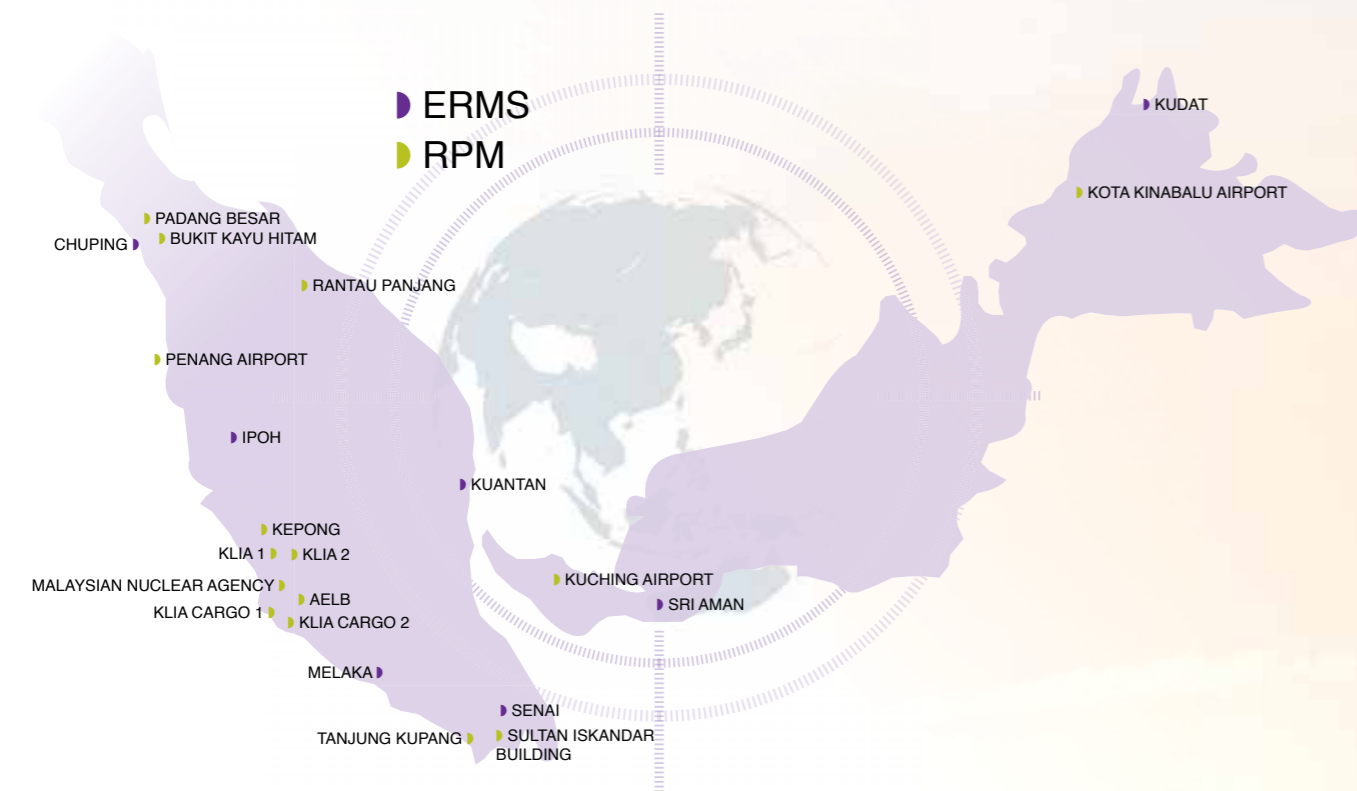
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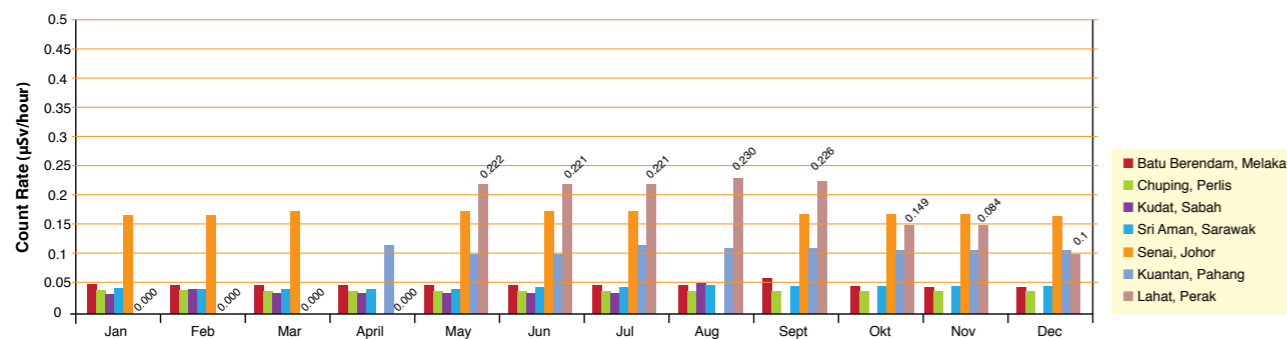
THE DEPARTMENT OF AELB

Strong Presence Nationwide

The AELB is a department under the Ministry of Science, Technology and Innovation (MOSTI). The AELB has been playing a critical role in ensuring nuclear safety and security in Malaysia by effectively regulating, safeguarding, and controlling atomic energy activities in the country. AELB's nationwide locations facilitate our role in ensuring NUCLEAR SECURITY and SAFETY for the country. The operations of our Headquarters in Dengkil, Selangor are supported by four Branches and seven monitoring stations situated in strategic locations all over Malaysia. Radioactivity in the environment is being monitored by the Environmental Radiological Monitoring System (ERMS). For purposes of nuclear security, Radiation Portal Monitors (RPM) are installed at stations located at entry points to the country to detect radiation.



The Average Monthly Reading for the ERMS at 7 Stations for 2011



Headquarters

ATOMIC ENERGY LICENSING BOARD (AELB)
 Ministry of Science, Technology and Innovation
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AELB Branch Offices

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 Ministry of Science, Technology and Innovation
 Northern Zone Branch
 No. 29, Lorong Perda Selatan 1
 Bandar Perda, 14000 Bukit Mertajam
 Pulau Pinang
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 Fax: 04-537 6380

EAST COAST BRANCH (TERENGGANU)
 Atomic Energy Licensing Board
 Ministry of Science, Technology and Innovation
 Eastern Zone Branch
 Pt 6980, Bukit Kuang Business Centre
 24000 Kemaman, Terengganu
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SOUTHERN BRANCH (JOHOR)
 Atomic Energy Licensing Board
 Ministry of Science, Technology and Innovation
 Southern Zone Branch
 No. 26, Jalan Sri Putra 1
 Bandar Putra, 81000 Kulai
 Johor
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SABAH & SARAWAK BRANCH
 Atomic Energy Licensing Board
 Ministry of Science, Technology and Innovation
 Sabah & Sarawak Branch
 Sub Lot 13, Lots 2370 & 2371
 Block 32, Kawasan Perindustrian Sibiyu
 97000 Bintulu, Sarawak
 Tel: 086-330 469/315 469/339 469
 (Direct Line to Branch Chief)
 Fax: 086-332 469



A Credible Enforcement Body

The AELB collaborates with various Ministries, Government departments and agencies in order to ensure that nuclear-related activities as well as nuclear energy facilities and materials are used safely and securely in Malaysia. The AELB also works with many other national and international organisations, including regulators to fulfil its given mandate.

Established on February 1, 1985, the Department of AELB enables the Malaysian Government to effectively control, inspect and enforce atomic energy activities in the country. There was a rapid rise in such activities after 1968 when the Government passed the Radioactive Substances Act 1968 to control the use of radioactive substance, primarily in the medical field. In April 1984, the Malaysian Parliament passed the Atomic Energy Licensing Act 1984 (Act 304). The Department was placed initially under the Prime Minister's Department with the responsibility to implement the functions stipulated under Section 3 of Act 304. In October 27, 1990, the AELB was moved from the Prime Minister's Department to the Ministry of Science, Technology and Innovation (MOSTI). Act 304 is currently being reviewed so as to ensure its continued relevance and effectiveness to meet current requirements. The AELB can be proud of its excellent performance in 2011 as it continues to perform well based on its functions, roles and commitments, which are as follows:

Functions

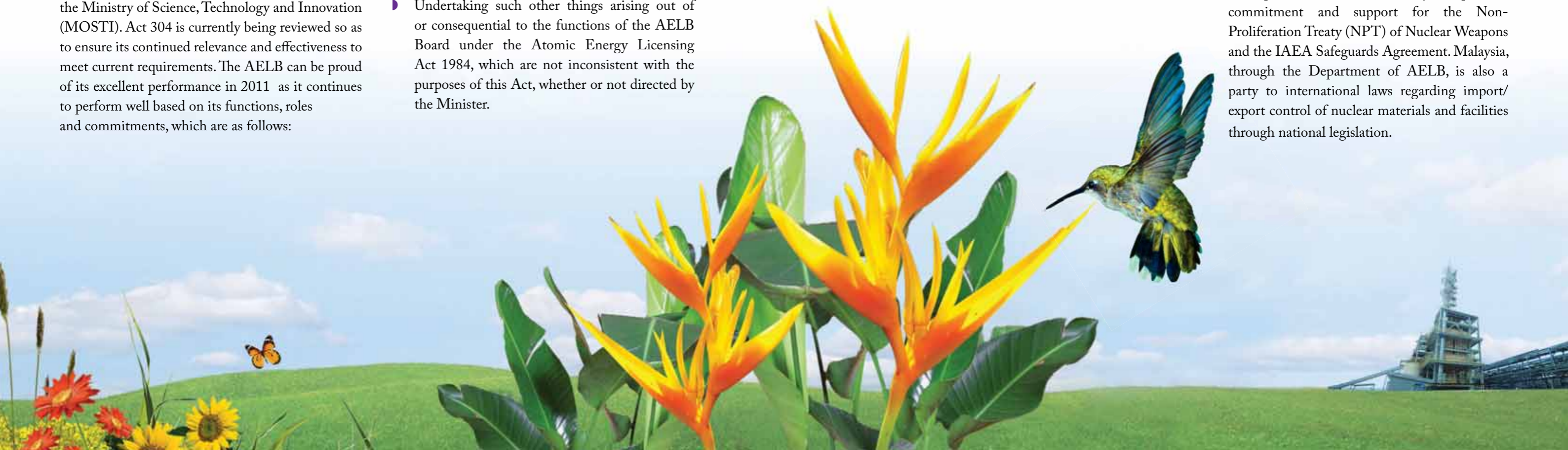
- ▶ Advising the Minister and the Government of Malaysia on matters relating to the Atomic Energy Licensing Act 1984 and developments pertaining thereto with particular reference to the implications of such developments for Malaysia.
- ▶ Exercising and supervising over the production, application and use of atomic energy and matters incidental thereto.
- ▶ Establishing, maintaining and developing scientific and technical co-operation with such other bodies, institutions or organisations in relation to nuclear matters or atomic energy as the Board thinks fit for the purposes of the Atomic Energy Licensing Act 1984.
- ▶ Performing as and when directed by the Government of Malaysia to fulfil the obligations arising from agreements, conventions or treaties relating to nuclear matters or atomic energy to which Malaysia is a party where such agreements, conventions or treaties relate to the purposes of the Atomic Energy Licensing Act 1984.
- ▶ Undertaking such other things arising out of or consequential to the functions of the AELB Board under the Atomic Energy Licensing Act 1984, which are not inconsistent with the purposes of this Act, whether or not directed by the Minister.

Roles

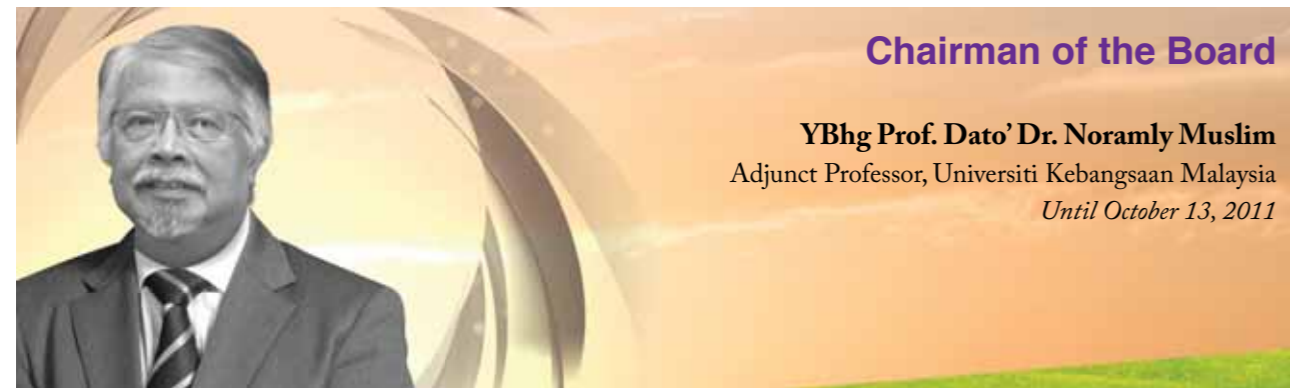
- ▶ Ensuring the effectiveness of AELB's regulatory function.
- ▶ Achieving a high level of efficiency and transparency in AELB's operations.
- ▶ Attracting and retaining excellent staff with the required knowledge, skill and competency.
- ▶ Diligently carrying out AELB's activities, which include the following:
 - Providing the regulations, codes of practice, standards, guidelines and advice.
 - Licensing the usage of atomic energy.
 - Conducting inspection and enforcement.
 - Carrying out regulatory research.
 - Carrying out scientific co-operation and complying with international obligations.
 - Dealing with nuclear and radiological emergencies.
 - Developing a safety culture.

Commitments

- ▶ **Ensuring Security and Safety for the Protection of Health and the Environment**
By establishing regulatory requirements and security measures pertaining to nuclear materials and facilities, the Department of AELB effectively ensures that licensees will be able to operate their facilities safely at all times, thus ensuring the SAFETY of everyone and protecting the environment. The Department of AELB also ensures the safe use of radiation equipment for medical and HEALTH purposes as well as helps protect the ENVIRONMENT through the use of relevant legislations on nuclear materials and facilities.
- ▶ **Safeguarding of Nuclear Activities for Peaceful Purposes**
In safeguarding the use of nuclear energy and technology to ensure that they are strictly for peaceful purposes, the country's long-term objectives on embarking onto other peaceful nuclear energy applications would be facilitated. The Department of AELB ensures the operationalisation of Malaysia's political commitment and support for the Non-Proliferation Treaty (NPT) of Nuclear Weapons and the IAEA Safeguards Agreement. Malaysia, through the Department of AELB, is also a party to international laws regarding import/export control of nuclear materials and facilities through national legislation.



Board Members of AELB



Board Members



1 YBhg Datuk Dr. Noor Hisham bin Abdullah
 Deputy Director General (Medical),
 Ministry of Health Malaysia
(16 December 2011 - 15 December 2014)

4 YBhg Prof. Madya Dr. Nahrul Khair Alang Md Rashid
 UIA Lecturer
(14 November 2011 - 13 November 2014)

2 YBhg Datuk Dr. Daud bin Mohamad
 Director General, Malaysian Nuclear Agency
 (Nuclear Malaysia), MOSTI
(13 October 2008 - 17 October 2011)

5 YBhg Datuk Ir. Ahmad Fauzi Hasan
 Chief Executive Officer
 Energy Commission
(2 July 2010 - 1 July 2013)

3 YBhg Prof. Datin Paduka Dr. Khatijah binti Mohd. Yusoff
 Deputy Secretary General (Science), MOSTI
(1 July 2009 - 30 June 2012)

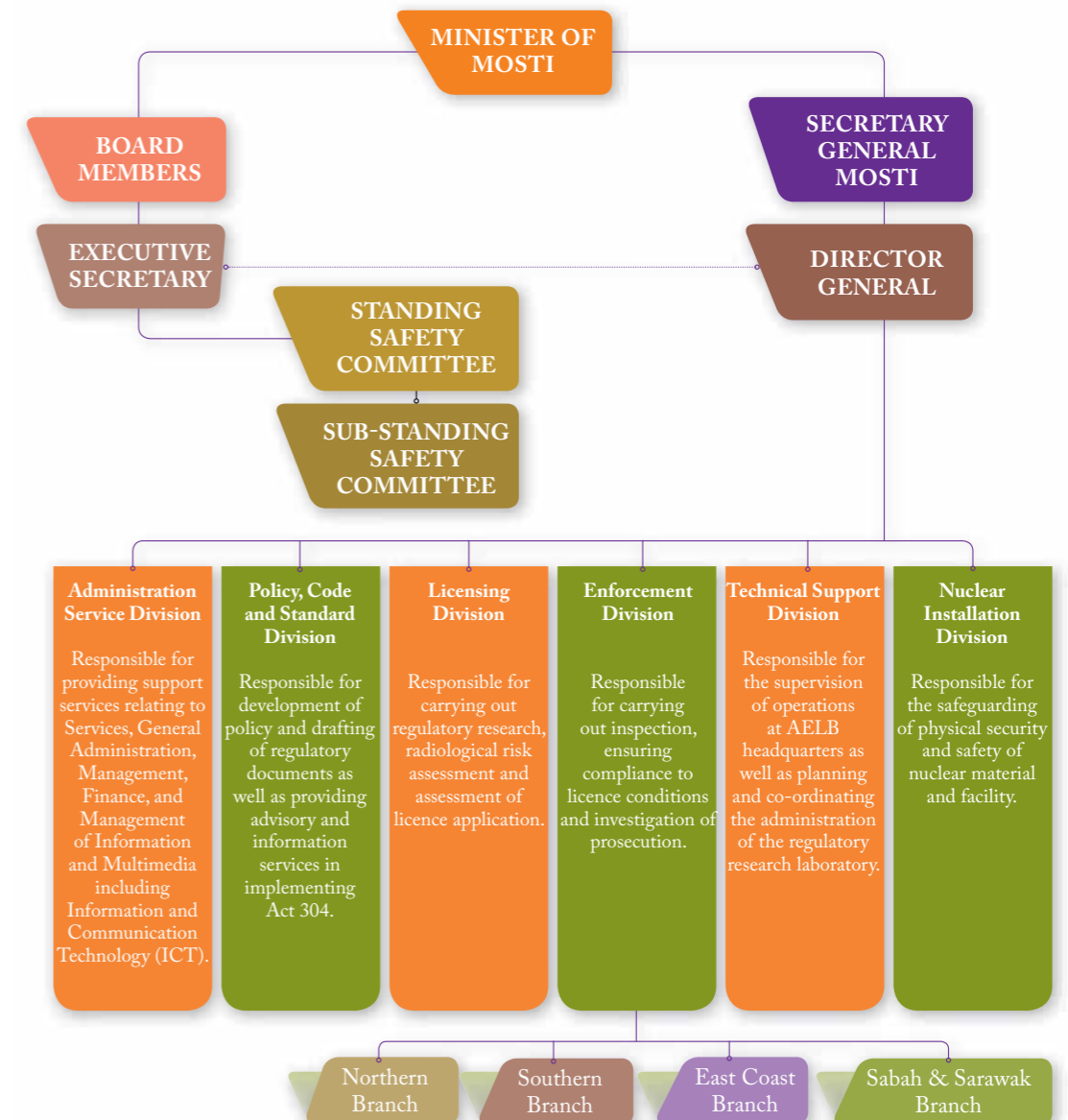


Governance of AELB

The Board of the AELB as the Relevant Authority under Act 304 is responsible for advising the Minister in charge of the Act and the Government of Malaysia on matters relating to the same Act, controlling the use of atomic energy, forging scientific co-operation to fulfill the obligations arising from legal agreements, conventions or international treaties that relate to the purpose of the peaceful uses of atomic energy. The Board of AELB's decisions regarding policies, financial management and strategies are endorsed by the Minister of the Ministry of Science, Technology and Innovation (MOSTI) who would then guide the Secretary General at the level of the Ministry.

Led by the Director General, the Department of AELB operates through various divisions and branches with specific responsibilities in licensing, inspection and enforcement. The Director General of AELB implements the Department's regulatory programmes and activities and reports to the Secretary General of MOSTI.

Organisation Chart



Bouquet of Thanks



The AELB appreciates the continuous strong support it receives from the Government of Malaysia, MOSTI and other relevant Ministries, Government departments and agencies as well as its international counterparts.

The AELB Management would like to thank the Department's staff members for their commitment and dedication in carrying out their duties, for helping to achieve organisational goals and for making AELB an effective, credible and relevant regulatory body.

Thank you for your support

Operational Report

The year 2011 saw the Department of AELB undergoing a very challenging period. Following the massive earthquake and Tsunami on March 11, 2011 in Japan that resulted in the Fukushima Daiichi nuclear disaster, the AELB was bombarded with many questions from members of the public who were concerned about their safety and the possible consequences of radioactive contamination to the environment.

Through the AELB, the Malaysian National Security Council (MKN) immediately mobilised an emergency response team which was also supported by Malaysia Nuclear Agency, to address public concern and anxiety and to provide the assurance that the Government is undertaking the necessary measures to ensure the safety of Malaysians.

Teams were despatched to major airports to help in scanning passengers and goods coming into the country. These screening activities at airports raised the level of public awareness regarding AELB's role in ensuring radiation safety. Public confidence was alleviated by the presence of our officers at these checkpoints. Screening centres were also opened at AELB Headquarters in Dengkil, Selangor. The Environmental Radiological Monitoring System (ERMS) used in monitoring radiation levels in the environment throughout the country helped to allay fear that arose from rumours purporting that radioactivity clouds from Japan were moving towards Malaysia. Emergency Response Officers at all monitoring stations worked around the clock so that real time information could be continuously relayed to the public.

Press statements were made daily to keep the people informed of the situation at all times. Upon AELB's recommendation, the Malaysian Government dispatched a team of officers to Japan in order to ascertain if there was a necessity to evacuate Malaysians from the country. After a thorough assessment of the situation there and following

discussions with the Japanese counterparts and relevant authorities, it was concluded that the evacuation of Malaysian citizens was not necessary. Despite the unfortunate circumstances, the Fukushima Daiichi nuclear disaster had inadvertently increased the public's awareness of AELB's roles and activities.

Another national public issue surfaced with the construction of the Lynas Rare Earths Plant in the Gebeng Industrial Site near Kuantan. Public attention was again caught by rumours and allegations regarding radiation risks and environmental and health impacts spread by the project opponents. Through public engagement sessions in Kuantan, the Department of AELB provided impartial technical and scientific information regarding the regulatory measures in place for such activities in order to allay public fears and concerns. A temporary office was also set up in the vicinity of the project site to facilitate monitoring of Lynas's activities.

The AELB makes no compromises with regard the safety of the public and the environment. The initial licence applications by Lynas Malaysia were rejected for not meeting the necessary regulatory requirements. It was only approved when additional stringent requirements were met. The Board's professional independence is evident from the composition of its members whereby no conflict of interest could arise from their respective professional functions and roles that may affect the credibility of the Board's decisions and the AELB Department's implementation of regulatory procedures, particularly in matters concerning the approval of licences, the overall delivery of services and in the making of recommendations and decisions.

The issuance and approval of licences, including to Lynas Malaysia, were done with multi-agency involvement and were also strictly based on scientific and technical assessments of many issues, focussing

primarily on safety. The assessments were also done in compliance with the national law as well as international standards and best practices.

Other highlights in 2011 are as follows:

Draft Atomic Energy Bill

The Department of AELB participated in the preparation of the draft Bill which, upon the endorsement by Parliament, will replace the Atomic Energy Licensing Act 1984 (Act 304). The drafting is co-ordinated by the Malaysia Nuclear Power Corporation (MNPC).

Atomic Energy Licensing Regulations (Radioactive Waste Management) 2011

Atomic Energy Licensing Regulations (Radioactive Waste Management) 2011 was gazetted on August 16, 2011. These regulations apply to all aspects of radioactive wastes resulting from medical, research, industry and various other applications as specified by the Board of AELB.

Implementation of Strategic Trade Act 2010 (Act 708)

Endorsed by the Parliament in 2010, the Strategic Trade Act provides control over the export, transshipment, transit and brokering of strategic items, including arms and related materials, and other activities that will or may facilitate the production and delivery of weapons of mass destruction. It also provides for other related matters consistent with Malaysia's national security and international obligations. Effective as of January 1, 2011, the Department of AELB is the relevant authority for the issuance of permits for goods under Category 0, namely nuclear materials, facilities and equipment. The Department has also been given the authority to implement enforcement as stipulated under Section 2 of the Act.

To ensure the smooth implementation of the Act, AELB carried out the following programmes:

- ▶ **Development of the ePermit System:** From April 1, 2011, all submissions for licence applications, approvals, amendments and renewals are to be made online. The online system has transformed and facilitated the licensing process and has been well-received by licensees. The department of AELB will continuously assess the ePermit system and make further improvements, if necessary.
- ▶ **Bilateral discussion between AELB and the United States (US) Department of Energy (DoE):** The bilateral discussion which was held on January 25, 2011 touched on the implementation of the Strategic Trade Act 2010 as a whole, including the proposal to implement a joint awareness programme, capacity building and the development of related guides and procedures.
- ▶ **Workshop on End Use – End User Licensing Analysis (EUEU) under Strategic Trade Act 2010 (Act 708):** The workshop, held from January 25-27, 2011, was aimed at training staff on ways to handle export applications, transit and transshipment of strategic goods.

MS ISO 9001:2008 Quality Management System Certification

On July 1, 2011, the Department of AELB received the MS ISO 9001:2008 Quality Management System certification from SIRIM for its online licensing and enforcement systems. It was awarded without conditions and is valid for one year. This was one of the landmark achievements for the Department in 2011.

Appointment as Chairman of IAEA's Nuclear Security Advisory Group

In 2011, YM Raja Dato' Abdul Aziz Raja Adnan, the Director General of the Department of AELB was appointed the Chairman of the IAEA's Nuclear Security Advisory Group (AdSec), which is the internationally recognised expert group tasked with the setting of international nuclear security guidelines. The appointment was based on individual expertise and is in recognition of the expertise available at AELB.

Contribution to the Malaysian Economy

The AELB continued to contribute towards enhancing the Malaysian economy by enabling and facilitating the safe use of nuclear and atomic energy resources and technology. In 2011, the number of licence applications, issuance of approvals, certification of Radiation Protection Officers (RPOs) and registration of workers reached 8,485. 6,678 or 78.7% of these constituted licence approvals thus reflecting the progress of the local nuclear and atomic energy industry.

International and Local Collaborations

Collaborations involving the exchange of knowledge and expertise with local and international partners can facilitate the country's nuclear power infrastructure development. In 2011, the AELB collaborated with the IAEA as well as the following:

- ▶ **U.S. Department of Energy (DOE) under the Global Threat Reduction Initiative (GTRI)** Five GTRI experts from U.S. DOE visited Malaysia from January 17-21, 2011. The objective of the visit was to verify and assess security equipment which had been installed at various premises under the GTRI programme. Among the premises licensed by the Department of AELB for the installation of such equipment were Universiti Kebangsaan Malaysia (UKM), Ansell Malaysia and Isotron (M) Sdn Bhd. The experts also visited premises which are under the purview of the Ministry of Health (KKM).
- ▶ **Bilateral Co-operation between the Department of AELB and National Nuclear Security Administration (NNSA)/U.S. DOE** As follow up to the exchange of Letters of Intent (LoI) on March 25, 2010, several technical meetings were held between the Department of AELB and NNSA/U.S. DOE in 2011 pertaining to bilateral co-operation in the field of radiation and nuclear safety and security. The technical meetings which focussed on State System of Accounting for and Control of Nuclear Material (SSAC) and Regulatory Development were held from March 2-4, 2011. The objective of the meetings was to jointly assess the draft training documents for the Security and Non-Proliferation regulations under the proposed amendments for Act 304. The meetings also reviewed the scope of co-operation between the two parties, which encompass SSAC, human capital development and the setting up of a safeguards laboratory.





Seminar on Peaceful Use of Nuclear Non-Proliferation (JAEA).

▮ Memorandum of Understanding (MoU) between AELB and Japan Nuclear Energy Safety Organization (JNES)

In conjunction with the Technical Support Organisation (TSO) Conference held in Japan from November 1-5, 2010, the Department of AELB and JNES discussed the possible signing of a MoU on technical co-operation. Both parties are currently in the process of identifying the scope of the MoU with a view to finalising it in the near future.

▮ Visits of Foreign Agencies to AELB

AELB received the delegations from the following foreign agencies seeking to establish working partnership:

- Tokyo Electric Power Services Co. (TEPCO)

The visit by TEPCO, Japan on January 10, 2011 was mainly to learn about Malaysia's nuclear energy plans and to share their experience about nuclear power.

- Norwegian-funded IAEA Extra Budgetary Programme (EBP)

AELB received an IAEA expert mission from January 13-14, 2011 under the Agency's EBP Pilot Programme on Strengthening of Nuclear Safety Assessment Competence through the Global Safety Assessment Network (G-SAN). Through the G-SAN framework, this Norwegian-funded IAEA EBP will:

- Support countries embarking upon a nuclear power programme in terms of the assessment of needs for nuclear safety.
- Support member countries in developing safety assessment capacity and knowledge management.
- Strengthen the sharing of knowledge and experience on safety assessment.

- Co-operation with Slovak Republic

The purpose of the visit by the Ambassador of the Slovak Republic, the Honourable Mr. Milan Lajciak, on February 14, 2011, was to discuss possible areas of co-operation between the Slovak Republic and Malaysia. The scope of co-operation has been identified as follows:

- Assessment of the selection of the site for licensing NPP.
 - Public confidence programme.
 - Expertise development through experts attachment programme.
 - Expert services.
 - Attachment/exchange of officers.
 - Post-graduate programme in the field of nuclear engineering in Slovak University through the recommendation of accreditation by the Ministry of Higher Learning, Malaysia.
- #### - Japan Atomic Industrial Forum (JAIF)
- A discussion was held on February 25, 2011 between JAIF and the Department of AELB to look into the potential of establishing co-operation in nuclear activities.
- #### - Japan Atomic Energy Agency (JAEA)
- On March 7, 2011, the JAEA discussed with the Department of AELB areas of capacity building it wishes to offer assistance on, including in the area of Nuclear Human Resource Development.

Training Organised by AELB in Co-operation with International Agencies

▮ International Radiological Assistance Training Programme for Emergency Responders (IRAPTER), February 21-24, 2011

Held at the Department Headquarters in co-operation with NNSA/U.S. DOE from February 21-24, 2011, IRAPTER was aimed at providing training and exposure on the technique for tracking radioactive and nuclear materials outside legal jurisdiction and the method for co-ordinating actions involving enforcement agencies. This is in line with the Department's role as the body responsible for radiological emergency under Directive 20 of the National Security Council.

▮ Workshop on Radiological Emergency Preparedness and Response, March 14-18, 2011

The Workshop on Radiological Emergency Preparedness and Response which was organised by the Department of AELB in co-operation with the Australian Nuclear Science & Technology Organization (ANSTO) was held on March 14-18, 2011.

▮ Regional Workshop on National Regulatory System for Nuclear Safety, Security and Safeguards

An IAEA Workshop on National Regulatory System for Nuclear Safety, Security and Safeguards was organised by the Department of AELB from November 28 to December 2, 2011. This was held at the National Science Centre in Kuala Lumpur in conjunction with MOSTI's Programme for the Promotion of Science and Mathematics Year 2011. A total of 26 international participants and 10 local participants took part in the workshop.

▮ Regional Training Course (RTC) on Security in the Transport of Radioactive Materials

The course was held from July 4-8, 2011 at Hotel Royal Bintang, Kuala Lumpur in co-operation with the IAEA.

▮ RTC on Public Communication

The course was held from July 11-15, 2011 at Hotel Royal Bintang, Kuala Lumpur in co-operation with IAEA.

▮ Placement of Contract Officer from Korea Institute of Nuclear Safety (KINS)

Dr. Young Joon Choi who holds a Ph.D on Nuclear Engineering from KAIST (Korea Advanced Institute of Science and Technology), began his duty as a Contract Officer at the Nuclear Installation Division for three months beginning from August 1, 2011 to October 30, 2011. This was one of the activities under the agreement between the Department of AELB and KINS, Republic of Korea.

Human Capital Development

AELB continued to develop staff competency through various training programmes, courses, seminars, workshops, briefings, talks, experts' visits and meetings, both locally and internationally. Staff members were encouraged to pursue higher education at Bachelor's, Master's and PhD levels in the country and overseas. Human capital development activities were carried out to provide the staff with the necessary exposure, knowledge and skills.

Outlook and Challenges

Both the high-profile Fukushima Daiichi nuclear disaster and issues surrounding the Lynas project provided opportunities for the Department of AELB to demonstrate transparency and openness with regard to keeping the public informed about its activities. A Public Consultancy Committee was set up to deal with comments from the public and to submit recommendations to the Board of AELB.

The above events also brought to light the crucial need for regulators to be equipped with sufficient manpower with the necessary skills and competence. The challenges in dealing with public concerns and in engaging stakeholders had been a valuable learning experience and will help to prepare for future challenges as the country forges ahead with the Government's Transformation Programme.

The outlook for the country's atomic energy industry is certainly positive with the number of applications for licences registering a healthy increase. Likewise, the development of nuclear science and technology has also grown in many sectors of the economy, including agriculture and health. As the country moves towards becoming an industrialised nation, it is foreseen that new technologies will emerge including those that could pose radiological risks if not adequately controlled and monitored in the aspects of safety, security and safeguards. In ensuring high levels of competence, effective enforcement and state of preparedness in dealing with any incident, the AELB will in turn continue to ensure that Malaysian citizens and the environment will remain protected and safe from undue radiological hazards.

Malaysia has had an excellent radiation safety record for more than 30 years. There has been no major nuclear-related incidents or cases of unauthorised possession of nuclear materials and reports show only very minor cases with no radiological consequences. This confirms the effectiveness of the regulatory system and the strict enforcement of rules and regulations.

Strategic Plan For 2011-2015

The National Mission covering the period 2011-2015 and the 10th Malaysia Plan 2011-2015 provide the essential context in framing the strategic thrusts and action plans of AELB. In the context of the national development agenda and to ensure that AELB meets the needs of the Government and the nation, five KRAs have been identified:

- ▶ Legal and governmental infrastructure for radiation and nuclear safety, security and safeguards.
- ▶ Control and supervision.
- ▶ National and international co-operation.
- ▶ Human capital.
- ▶ Knowledge management.



'Orphan Source Search Kuala Lumpur' Workshop.



Participants during Practical Exercise 'Orphan Source Search Kuala Lumpur' Workshop.

The strategic thrusts (ST) identified under the Strategic Plan for 2011-2015 are:

ST1: Enhancement of an effective legal governmental framework for radiation and nuclear safety, security and safeguards, including an independent regulatory body.

The plan of action includes:

- The development of new guidance documents:
 - Guide on licence application related to the National Management Centre for Radioactive Wastes.
 - Reference list related to the national facility for eliminating radioactive wastes
 - Guide on the appointment of duties and responsibilities pertaining to radiation Protection Advisory (RPA).
 - Guide on licence application related to calibration laboratories.
 - Reference list for Class B and Class F licences.
- Implementation of nuclear installation licensing regulations
- Drafting and submission of standard for the acceptance and verification of codes or standards for design and construction of NPP.
- To fully implement various new Acts including Atomic Energy Licensing Act 1984 (Act 304)/ Atomic Act Bill 201_, Atomic Energy



Experts from IAEA and Risk Spectrum.

Licensing (Radioactive Waste Management) Regulations 201_, and Atomic Energy Licensing (Transport) regulations 201_, all by 2015.

ST2: Effective co-operation and active participation at national and international levels in technical and policy issues of radiation and nuclear safety, security and safeguards.

The plan of action includes:

- To conduct regular awareness programmes on safety for licensee, radiation workers and the community.
- To strengthen nuclear safety, security and safeguards infrastructure through effective management and the implementation of EBP for nuclear safety.
- To intensify public awareness programme.
- To conduct Biodosimetry research.
- To sign LOI with NNSA/DoA.

ST3: Enhancement of supervision mechanism towards licensees' compliance to the regulatory requirements and customer satisfaction to support national economic growth.

The plan of action includes:

- To process online applications and review related supporting documents submitted by applicants; conduct customer satisfaction survey; develop new Client Charter for licensing process application for nuclear research reactor purposes. (Note: The Client Charter for licence application has already been put to use); and conduct regulatory research with the following aims:
 - Determination of national radioactive waste disposal (EIA/RIA for NORM and TENORM study)
 - Study of coal and its products radiological composition
 - Study on consumer products.

- To conduct frequent inspection of research reactor facility in ensuring compliance of research reactor facility towards the implementation of licence condition.
- To implement radiation protection programme and to perform environmental sampling for radiological monitoring.
- To establish guidelines and procedures for Act 708 and Act 304.

ST4: Enhancement of effective arrangements for emergency preparedness and response for radiation and nuclear incidents and accidents.

The plan of action includes:

- To ensure all monitoring and laboratory equipment are available at the specific required time.
- To approve relevant documents through forum audit.

ST5: Building capacity and capability of radiation and nuclear regulatory infrastructure and human capital.

The plan of action includes:

- To ensure the smooth implementation of online application system.
- To attend technical and non-technical courses at national and international levels.
- To develop NDA laboratory.
- To finalise computer-based training for sustainability of the competency of officers.

ST6: Protection and assurance of the inalienable rights to develop nuclear technology safely and securely for peaceful purposes in Malaysia and to foster public confidence in peaceful uses of radiation and nuclear technology.



MEST (Mobile Expert Support Team) Train for Trainers Course with KASTAM DiRaja Malaysia.



AELB staff as MEST with Identifinder device having a discussion with KASTAM Front Line Officer (FLO).

The plan of action includes:

- To designate/withdraw IAEA safeguards inspector through technical competency evaluation.
- To set National Radiation Monitoring System in order to assist other enforcement agencies to detect pollution level and illicit trafficking of nuclear and radioactive materials for national safety.
- To ratify the protocol additional to the comprehensive safeguards agreement with IAEA.

AELB will continuously review our action plans and improve our work processes so that we will remain a highly effective regulatory body. Each division of AELB will steer the implementation of the action

plans for their respective divisions as spelt out under the five-year (2011-2015) Action Plan. We will also continue to uphold standards and meet our international obligations to ensure the safety and security of our nation.

Issued by the Office of the Executive Secretary of AELB



**Petunjuk Prestasi Utama
(KPI) 2011**

***Key Performance Indicators
(KPIs) 2011***

Seperti di tahun-tahun sebelumnya, program yang dijalankan pada tahun 2011 adalah selari dengan objektif MOSTI berdasarkan agenda nasional yang berikut: (1) penjanaaan ilmu untuk membangunkan modal insan dalam ST&I dengan penekanan terhadap meningkatkan budaya kesedaran keselamatan; (2) peningkatan tahap kesihatan negara dan masyarakat untuk meninggikan mutu kehidupan rakyat Malaysia dan menjaga alam sekitar; dan (3) penghasilan kekayaan melalui peningkatan kemudahan dan mekanisme dan perdagangan, yang menyumbang kepada perkembangan pesat industri yang berkaitan dengan penggunaan teknologi nuklear dan sinaran dalam berbagai bidang, seterusnya membantu merangsang ekonomi negara.

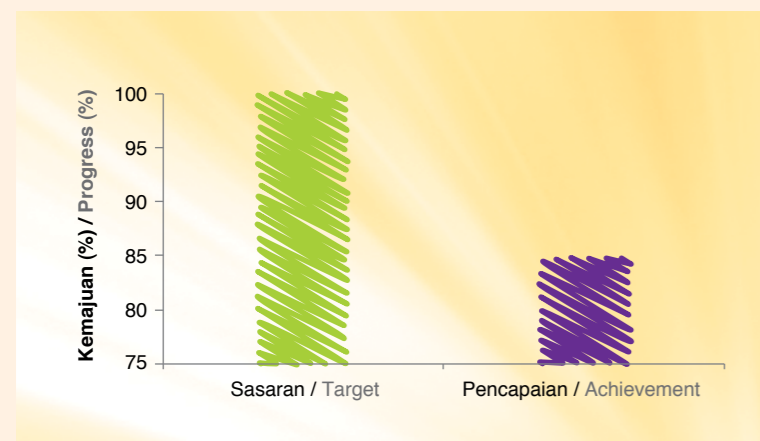
As in previous years, programmes carried out in 2011 were aligned with MOSTI's objectives based on the following national agenda: (1) knowledge generation to develop human capital in ST&I with emphasis on enhancing a culture of safety awareness; (2) enhancement of national and societal well-being to improve the quality of life enjoyed by Malaysians and protect the environment; and (3) wealth creation through trade facilitation and mechanism, which contributes towards the rapid development of industries related to the use of radiation and nuclear technologies in various fields, hence helping to boost the country's economy.

Kemajuan Operasi Operational Progress

Bidang Hasil Utama (KRA) setiap bahagian dalam AELB dinyatakan secara jelas, lengkap dengan pelan tindakan dan jangka waktu siap setiap program strategik. Carta dan jadual berikut menunjukkan kemajuan keseluruhan AELB pada tahun 2011.

KRAs of each division within AELB were clearly identified, complete with action plans and time frame for completion of strategic programmes. The following charts and tables show the overall progress of AELB in 2011.

RAJAH 1 Kemajuan Keseluruhan AELB
FIGURE 1 Overall Progress of AELB



Keseluruhan / Overall	Kemajuan / Progress (%)
Sasaran / Target	100.00
Pencapaian / Achievement	81.13

RAJAH 2 Kemajuan yang Dicapai oleh Bahagian-bahagian AELB (sambungan)
FIGURE 2 Progress Achieved by the Divisions of AELB (continued)

Butir-butir Details	Kemajuan Bahagian Dasar, Kod dan Standard Progress of Policy, Code and Standard Division (%)	Kemajuan Bahagian Perlesenan Progress of Licensing Division (%)	Kemajuan Bahagian Penguatkuasaan Progress of Enforcement Division (%)	Kemajuan Bahagian Installasi Nuklear Progress of Nuclear Installation Division (%)	Kemajuan Bahagian Khidmat Sokongan Teknikal Progress of Technical Support Division (%)	Kemajuan Bahagian Khidmat Pengurusan Progress of Administration Service Division (%)	Kemajuan Bahagian Komunikasi dan Multimedia Progress of Communication and Multimedia Division (%)
Teras Strategik 1 / Strategic Thrust 1 Peningkatan rangka kerja pengendalian perundangan yang berkesan untuk keselamatan nuklear dan sinaran termasuk penubuhan badan penguatkuasa bebas Enhancement of an effective legal governmental framework for radiation and nuclear safety, security and safeguards including an independent regulatory body	98	95	N/A	55	N/A	100	N/A
Teras Strategik 2 / Strategic Thrust 2 Kerjasama berkesan dan penglibatan aktif di peringkat kebangsaan dan antarabangsa dalam isu-isu polisi dan teknikal bersabit dengan keselamatan, sekuriti dan kawalgunaan nuklear dan sinaran Effective cooperation and active participation at national and international levels in technical and policy issues of radiation and nuclear safety, security and safeguards	94	83	N/A	100	70	96	100
Teras Strategik 3 / Strategic Thrust 3 Peningkatan mekanisma untuk menentukan pematuhan pemegang-pemegang lesen terhadap keperluan peraturan dan kepuasan pelanggan bagi menyokong pertumbuhan ekonomi negara Enhancement of supervision mechanism towards licensee's compliance to the regulatory requirements and customer satisfaction to support national economic growth	N/A	85	72.18	75	40	N/A	N/A

RAJAH 2 Kemajuan yang Dicapai oleh Bahagian-bahagian AELB (sambungan)
FIGURE 2 Progress Achieved by the Divisions of AELB (continued)

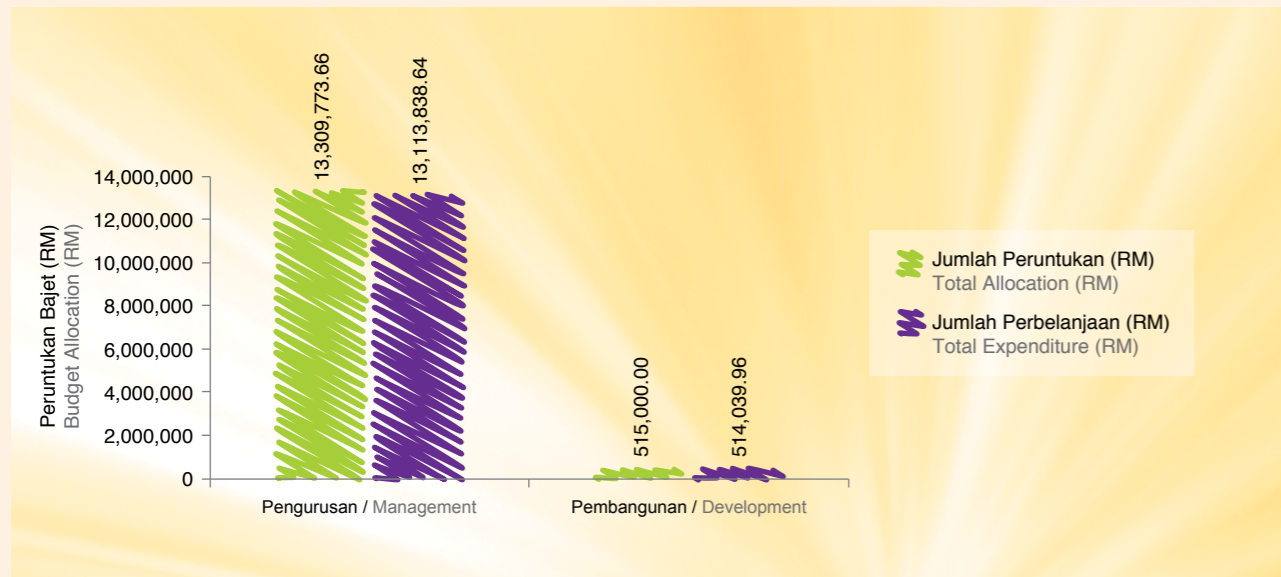
Butir-butir Details	Kemajuan Bahagian Dasar, Kod dan Standard Progress of Policy, Code and Standard Division (%)	Kemajuan Bahagian Perlesenan Progress of Licensing Division (%)	Kemajuan Bahagian Penguatkuasaan Progress of Enforcement Division (%)	Kemajuan Bahagian Installasi Nuklear Progress of Nuclear Installation Division (%)	Kemajuan Bahagian Khidmat Sokongan Teknikal Progress of Technical Support Division (%)	Kemajuan Bahagian Khidmat Pengurusan Progress of Administration Service Division (%)	Kemajuan Bahagian Komunikasi dan Multimedia Progress of Communication and Multimedia Division (%)
Teras Strategik 4 / Strategic Thrust 4 Peningkatan penyusunan berkesan untuk persediaan dan tindakan menghadapi kecemasan kemalangan dan insiden nuklear dan sinaran Enhancement of effective arrangements for emergency preparedness and response for radiation and nuclear incidents and accidents	N/A	N/A	93.75	N/A	47	N/A	99
Teras Strategik 5 / Strategic Thrust 5 Membina kemampuan dan kebolehan sinaran dan infrastruktur peraturan nuklear dan modal insan Building capacity and capability of radiation and nuclear regulatory infrastructure and human capital	76	N/A	N/A	75	N/A	N/A	N/A
Teras Strategik 6 / Strategic Thrust 6 Melindungi dan menjamin hak untuk membangunkan keselamatan teknologi nuklear bagi tujuan aman di Malaysia dan memupuk keyakinan awam dalam penggunaan teknologi nuklear dan sinaran dengan aman Protection and assurance of the inalienable rights to develop nuclear technology safely and securely for peaceful purposes in Malaysia and to foster public confidence in peaceful uses of radiation and nuclear technology	N/A	N/A	N/A	100	48	N/A	100

RAJAH 3 Petunjuk Prestasi Utama (KPI) 2011
FIGURE 3 Key Performance Indicators (KPI) 2011

OBJEKTIF MOSTI MOSTI'S OBJECTIVES	PROGRAM PROGRAMMES	KPI 2011 KPI 2011	PENCAPAIAN ACHIEVEMENTS
Objektif 1 Objective 1 Penghasilan Kekayaan Wealth Creation	Lesen, pengiktirafan (PPS, penyelia dan pengendali industri radiografi) dan Import/Eksport License, certification (RPOs, supervisors and radiography industry workers) and Import/Export	RM1,100,000.00	RM1,149,411.84
Objektif 2 Objective 2 Penjanaan Ilmu Pengetahuan Knowledge Generation	Peperiksaan Persijilan PPS Examination to certify RPOs Pelaksanaan program latihan kebangsaan/serantau dan antarabangsa bagi tujuan meningkatkan keselamatan sinaran Implementation of national/regional and international training programmes for enhancing radiation security	600 calon 600 candidates 6 program latihan 6 training programmes	550 calon 550 candidates 8 program latihan 8 training programmes
Objektif 3 Objective 3 Kesejahteraan Rakyat Well-being of the People	Pemeriksaan/ Inspection Insiden/Kemalangan Radiologi Incidents/Radiological Accidents Tindakan Perundangan / Legal Action Purata Dedahan Dos Pekerja Sinaran (mSv/orang) Average Exposure Dose of Radiation Workers (mSv/person) Pembangunan Dokumen Development of Documents	433 9 231 0.53 mSv 15 dokumen 15 documents	512 9 270 0.53 mSv 18 dokumen 18 documents
	Mewujudkan kesedaran awam dalam bidang sains, teknologi dan inovasi To create public awareness in the fields of science, technology and innovation	16 program kesedaran awam 16 public awareness programmes	28 program kesedaran awam 28 public awareness programmes

Pencapaian dalam memenuhi tiga objektif utama MOSTI dalam tahun 2011 ditunjukkan dalam rajah di atas.
 Achievements in meeting the three key objectives of MOSTI in 2011 are shown in the figure above.

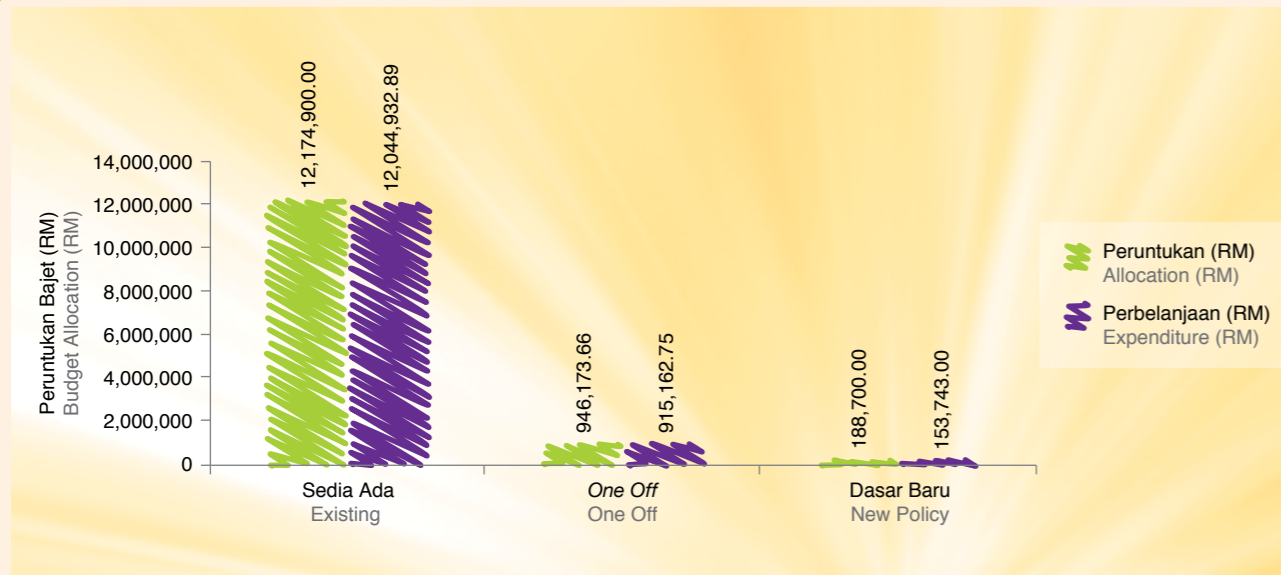
RAJAH 4 Bajet Mengurus
FIGURE 4 Operation Budget



Pada 2011, AELB menerima peruntukan bajet sebanyak RM 13,824,773.66 di mana 98.53% dan 99.81% masing-masing telah digunakan untuk aktiviti pengurusan dan pembangunan.

In 2011, AELB received a budget allocation of RM13,824,773.66, of which 98.53% and 99.81% were used for management and development activities respectively.

RAJAH 5 Prestasi Kewangan
FIGURE 5 Financial Performance



Jumlah peruntukan untuk perbelanjaan mengurus pada 2011 adalah sebanyak RM13,309,773.66, di mana sebanyak 98.53% atau RM13,113,838.64 telah dibelanjakan.

Total allocation for operating expenses in 2011 was RM13,309,773.66, of which 98.53% or RM13,113,838.64 was spent.

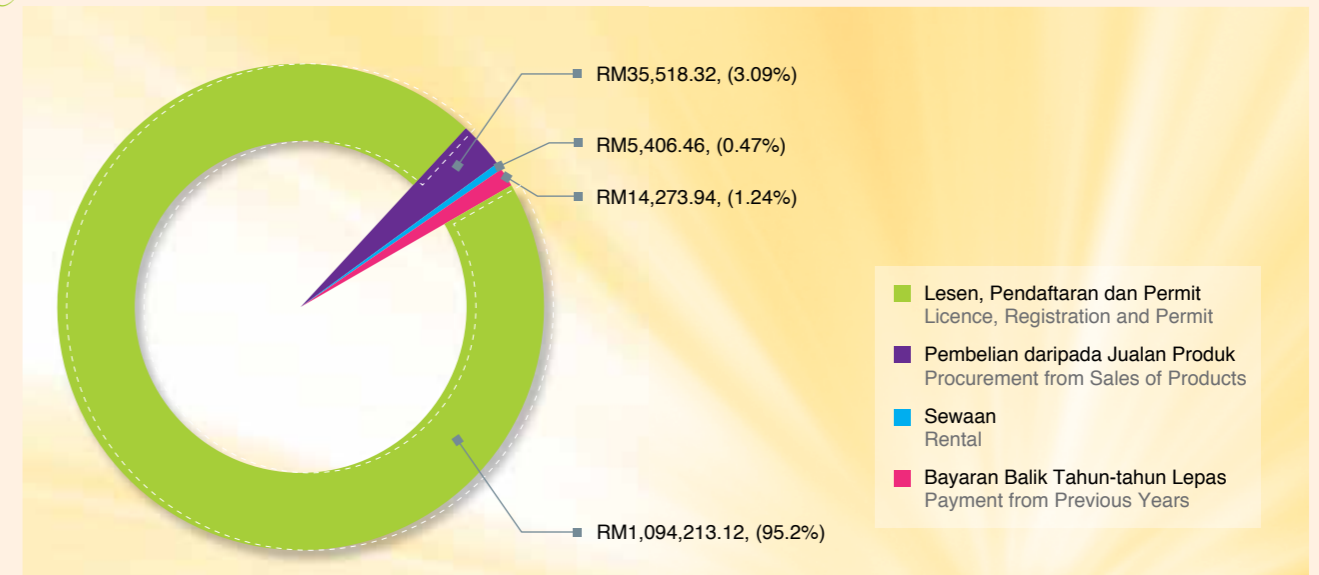
RAJAH 6 Bajet Pembangunan
FIGURE 6 Development Budget

Projek / Project	Peruntukan 2011 Allocation 2011 (RM)	Perbelanjaan Expenditure (RM)	Peratusan Percentage (%)
Kajian Penggubalan Perundangan dan Kawalseliaan Ke Arah Aplikasi Tenaga Nuklear Studies of Formulation of Legislation and Regulatory Towards Nuclear Energy Applications	15,000.00	14,040.00	93.60
Perolehan Makmal Bergerak Bagi Pasukan Bertindak Kecemasan Radiologi Kebangsaan Acquisition of Mobile Laboratory for the National Radiological Emergency Response Team	500,000.00	499,999.96	100.00
Perolehan Peralatan Sekuriti Bahan Nuklear dan Radioaktif Kebangsaan Acquisition of Equipment for Nuclear and Radioactive Materials Security National	-	-	-
Jumlah / Total	515,000.00	514,039.96	99.81

Pada 2011, AELB menerima peruntukan sebanyak RM515,000.00 untuk membiayai projek di bawah RMK10. Perbelanjaan berjumlah sebanyak RM514,039.96 atau 99.81% daripada peruntukan yang diberikan tahun ini.

In 2011, AELB received an allocation of RM515,000.00 to finance projects under the 10MP. The expenditure amounted to RM514,039.96 or 99.81% of the allocation given for the year.

RAJAH 7 Hasil
FIGURE 7 Revenue



Jumlah hasil pada 2011 adalah sebanyak RM1,149,411.84, di mana RM1,094,213.12 atau 95.2% diperolehi daripada Yuran Lesen, Pendaftaran dan Permit, dan lain-lain sumber.

Revenue for 2011 amounted to RM1,149,411.84, of which RM1,094,213.12 or 95.2% was derived from Licence fees, Registration and Permit while the rest were from other sources.

RAJAH 8 Pembangunan Sumber Manusia FIGURE 8 Human Resource Development



Pada 2011, seramai 298 kakitangan telah menghadiri pelbagai program latihan, di mana 68.1% daripada program latihan tersebut dijalankan di dalam negara dan baki sebanyak 31.9% dijalankan di luar negara.

In 2011, a total of 298 staff attended various training programmes, of which 68.1% was local training and the remaining 31.9% training was conducted overseas.

RAJAH 9 Perjawatan FIGURE 9 Staffing

Kategori / Category	Kakitangan / Staff	Diisi / Filled	Kosong / Vacant
P & P (Jusa C)* / M & P (Jusa C)**	1	1	-
P & P (Kump. A)* / M & P (Group A)**	51	43	8
Sokongan I (Kump. B) / Support I (Group B)	48	47	1
Sokongan II (Kump. C) / Support II (Group C)	39	34	5
Sokongan III (Kump. D) / Support III (Group D)	23	23	-
Jumlah / Total	162	148	14

*P & P = Pengurusan dan Profesional

**M & P = Management and Professional

Pada 2011, sejumlah 162 jawatan telah ditawarkan di AELB, di mana sebanyak 148 jawatan telah diisi manakala 14 lagi masih kosong.

In 2011, vacancies available in AELB were 162, of which 148 were filled while 14 remained vacant.

RAJAH 10 Ringkasan Prestasi FIGURE 10 Performance Summary

Bil. No.	Petunjuk Prestasi / Performance Indicators	Pencapaian Achievements 2010	Pencapaian Achievements 2011	Perbezaan Difference %
1	Bilangan Permohonan Lesen: / Number of License Applications:	1,119	1,166	4.20
	Bilangan Permohonan Diterima / Number Received	1,119	1,166	4.20
	Bilangan Diproses / Number Processed			
2	Bilangan Pemeriksaan yang Dijalankan Number of Inspections Conducted	432	512	18.5
3	Bilangan Kertas Kerja dan Kertas Maklumat untuk Mesyuarat Lembaga Number of Working Papers and Information Papers Presented at Board Meetings	1	30	172.73
4	Bilangan Maklumat Teknikal yang Dikeluarkan Number of Technical Information Circulars Issued	-	17	466.67
5	Bilangan Calon yang Diiktiraf sebagai PPS Number of Candidates Accredited as RPOs	334	412	23.35
6	Bilangan Calon yang Diiktiraf sebagai Penyelia Number of Candidates Accredited as Supervisors	168	275	63.69
7	Bilangan Calon yang Menduduki Peperiksaan Perlindungan Sinaran Number of Candidates Sitting for Radiation Protection Examination	581	550	-5.36
8	Tindakan Penguatkuasaan: / Enforcement Actions:			
	Fail Penyiasatan Dibuka / Investigation Files Opened	46	31	-32.61
	Kes Dibawa Ke Mahkamah / Cases Brought To Court	3	0	0
	Penggantungan Pekerja Sinaran dan PPS Suspended Radiation Workers and RPOs	40	17	59
	Pembatalan Lesen / Licence Cancelled	0	0	0
	Penggantungan Lesen / Licence Suspended	0	0	0
	Amaran Bertulis Dikeluarkan / Written Warnings Issued	29	16	55
	Bilangan Siasatan / Number of Investigations	48	3	27
9	Bilangan Permohonan Bahan Radioaktif, Radas Penyinaran dan Bahan Mineral Diproses: Number of Applications of Radioactive Materials, Irradiation Apparatus and Duly Processed Minerals:			
	Import / Import	1,735	1,643	-5.3
	Eksport / Export	911	626	-31.28
	Pergerakan / Removals	364	61	-83.24
10	Penguatkuasaan: / Enforcements:			
	Kecekapan Pegawai Penguatkuasaan Efficiency of Enforcement Officers	13.4	13.78	2.84
	Keberkesanan Pemeriksaan / Effectiveness of Inspections	2.1	13.86	560
11	Pemprosesan Lesen: / License Processing: Kecekapan Pegawai Penilai / Efficiency of Assessment Officers	86	90	4.65

Rajah di atas menunjukkan ringkasan prestasi AELB berdasarkan pelbagai petunjuk prestasi daripada bilangan permohonan lesen yang diterima dan diproses untuk kecekapan para pegawai yang bertanggungjawab ke atas penguatkuasaan, pemeriksaan dan pemprosesan lesen.

The above figure summarises the performance of AELB according to the various indicators ranging from the number of licence applications received and processed to the efficiency of officers in charge of enforcement, inspection and licence processing.

RAJAH 11 Pembangunan Dokumen
FIGURE 11 Development of Documents

Bil. No.	Bil. Siri Dokumen Document Series No.	Tajuk Dokumen Perundangan / Title of Legal Documents
1.	P.U. (A) 274 P.U. (A) 274	Peraturan-Peraturan Perlesenan Tenaga Atom (Pengurusan Sisa Radioaktif) 2011 Atomic Energy Licensing Regulations (Management of Radioactive Waste) 2011

Bil. No.	Bil. Siri Dokumen Document Series No.	Tajuk Dokumen Bukan Perundangan / Title of Non-Legal Documents
1.	Notis Pemberitahuan Bil. 1/2011 Customer Circular Notice No. 1/2011	Perlaksanaan Peraturan-Peraturan Perlesenan Tenaga Atom (Perlindungan Sinaran Keselamatan Asas) 2010 Implementation of Atomic Energy Licensing Regulations (Basic Safety of Radiation Protection) 2010
2.	Notis Pemberitahuan Bil. 2/2011 Customer Circular Notice No. 2/2011	Pengeluaran Lesen Kelas D bagi Aktiviti Pengangkutan dan Lesen Kelas E bagi Aktiviti Import dan Eksport di bawah Akta Perlesenan Tenaga Atom 1984 (Akta 304) Class D Licence for Transport Activity and E Class Licence for Import and Export Activities under Atomic Energy Licensing Act 1984 (Act 304)
3.	Notis Pemberitahuan Bil. 3/2011 Customer Circular Notice No. 3/2011	Notis Pemberitahuan Talian "HOTLINE" 1800-88-7999 untuk Kecemasan Sinaran Sahaja Circular Notice Line "HOTLINE" 1800-88-7999 for Radiation Emergencies Only
4.	Notis Pemberitahuan Bil. 4/2011 Customer Circular Notice No. 4/2011	Perubahan Dalam Sistem Pengisytiharan Syarikat (Self Declaration) Berkenaan Permit Di Bawah Akta Perdagangan Strategik 2010 Changes in the Declaration of System Companies (Self Declaration) Regarding Permit Under the Strategic Trade Act 2010
5.	LEM/TEK/59 LEM/TEK/59	Garis Panduan untuk Kod Hs: Perkara Strategik Di bawah Akta Perdagangan Strategik (Akta 708) Guideline for Hs Code: Strategic Item Under Strategic Trade Act 2010 (Act 708)
6.	LEM/TEK/60 LEM/TEK/60	Panduan Melakukan Ujian Kebocoran Terhadap Punca Terkedap Guide for Performing Leak Testing on Sealed Source
7.	LEM/TEK/61 LEM/TEK/61	Panduan Demonstrasi Dan Pameran Peralatan Sinaran Demonstration Guide and Radiation Equipment Exhibition
8.	LEM/TEK/62 LEM/TEK/62	Panduan Penyediaan Pelan Sekuriti Punca Radioaktif Preparation Guide for Radioactive Sources Security Plan
9.	LEM/TEK/63 LEM/TEK/63	Garis Panduan Pemilihan Tapak untuk Loji Kuasa Nuklear Guideline for Site Selection for Nuclear Power Plant
10.	LEM/TEK/64 LEM/TEK/64	Garis Panduan Penilaian Tapak untuk Loji Janakuasa Nuklear Guideline for Site Evaluation for Nuclear Power Plant
11.	LEM/TEK/65 LEM/TEK/65	Panduan Pengelasan Kawasan Kerja Menurut Peraturan-Peraturan Perlesenan Tenaga Atom (Perlindungan Sinaran Keselamatan Asas) 2010 (P.U (A) 46) Classification Guide for Working Area According to the Atomic Energy Licensing Regulations (Basic Safety of Radiation Protection) 2010 (P.U (A) 46)
12.	LEM/AL/2 LEM/AL/2	Keperluan Pengawalseliaan Untuk Penilaian Tapak Loji Kuasa Nuklear Regulatory Requirements For Site Evaluation Of Nuclear Power Plant
13.	KOD/EMT/114 KOD/EMT/114	Senarai Kuasa Pengerusi dan Setiausaha Eksekutif yang Telah Diwakilkan Berdasarkan Seksyen 67 Akta 304 List of Power of the Chairman and Executive Secretary Who Have Been Represented Based on Section 67 of Act 304
	KOD/EMT/115 Sem. 1 KOD/EMT/115 Sem. 1	Pengeluaran Lesen Kelas D Bagi Aktiviti Pengangkutan Dan Lesen Kelas E Bagi Aktiviti Import Dan Eksport Di Bawah Akta Perlesenan Tenaga Atom 1984 (Akta 304) Class D Licence for Transport Activity and E Class Licence for Import and Export Activities under Atomic Energy Licensing Act 1984 (Act 304)

RAJAH 11 Pembangunan Dokumen (sambungan)
FIGURE 11 Development of Documents (continued)

Bil. No.	Bil. Siri Dokumen Document Series No.	Tajuk Dokumen Bukan Perundangan / Title of Non-Legal Documents
15.	KOD/EMT/116 KOD/EMT/116	Kaedah Penetapan Fee Bagi Radas Penyinaran Yang Mempunyai Dua Unit Tiub Sinar-X Fee Setting Method for Irradiating Apparatus Having Two X-Ray Tube Unit
16.	KOD/EMT/117 KOD/EMT/117	Perlesenan Ion Implanter Ion Licensing Implanter
17.	KOD/EMT/118 KOD/EMT/118	Pihak Berkuasa Berkenaan Bagi Pelupusan Sisa Radioaktif Appropriate Authority for Disposal of Radioactive Waste

Bagi mempertingkatkan kecekapan AELB dalam mengawalselia aktiviti tenaga atom di Malaysia, dokumen perundangan dan bukan perundangan telah dibangunkan dan digunapakai oleh AELB dan juga pemegang lesen yang menjalankan aktiviti tersebut. Beberapa dokumen yang disediakan sepanjang tahun 2011 ditunjukkan dalam rajah di atas.

In order to enhance the efficiency of AELB in safeguarding atomic energy activities in Malaysia, both legal and non-legal documents were developed and adopted by AELB and licence holders involved in such activities. Some documents developed in 2011 are as shown in the figure above.

RAJAH 12 Penguatkuasaan
FIGURE 12 Enforcement

Bil. No.	Tindakan / Actions	Jumlah Total
1	Fail Penyiasatan Dibuka / Investigation Files Opened	31
2	Kes Dibawa Ke Mahkamah / Cases Brought to Court	0
3	Pembatalan Lesen / Licences Cancelled	0
4	Penggantungan Lesen/ Licences Suspended	0
5	Amaran Bertulis Dikeluarkan / Written Warnings Issued	16
6	Bilangan Siasatan / Number of Investigations	3
Jumlah / Total		50

Sejumlah 50 tindakan penguatkuasaan telah diambil oleh AELB dalam tahun 2011 mengikut undang-undang di bawah Akta 304.

A total of 50 enforcement actions were taken by AELB in 2011 in accordance with enforcement laws specified under Act 304.

RAJAH 13 Perlesenan, Kelulusan dan Pengiktirafan
FIGURE 13 Licensing, Approvals and Certification

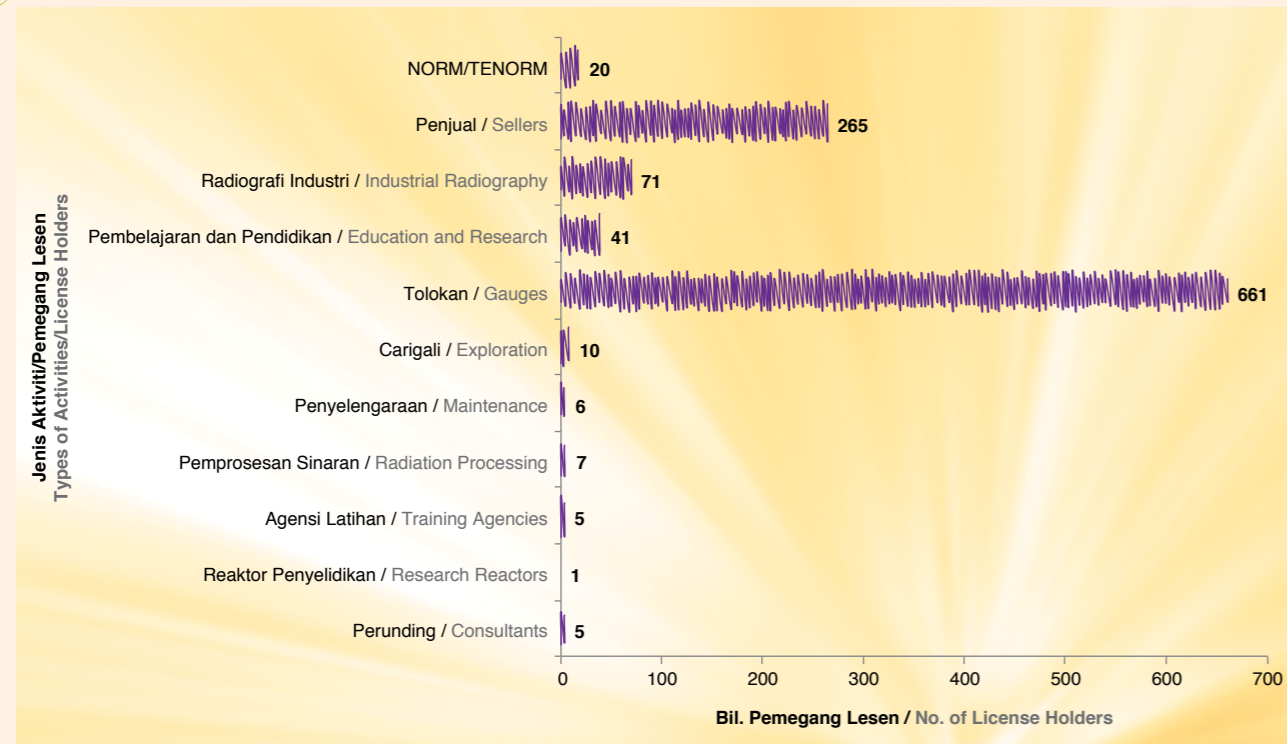
Bil. No.	Jenis Kelulusan Types of Approval	Bilangan Kelulusan Number of Approval
1	Permohonan Lesen / Licence Applications	1,166
2	Kebenaran Dikeluarkan / Issued Approvals	6,678
3	Pengiktirafan PPS / Certification of RPOs	412
4	Pendaftaran / Registration	229
Jumlah / Total		8,485

Pada 2011, jumlah permohonan lesen, kelulusan dikeluarkan, pengiktirafan PPS dan pendaftaran mencapai 8,485. Kelulusan dikeluarkan mencatatkan jumlah tertinggi iaitu 6,678. Pecahan mengikut jenis kelulusan adalah seperti ditunjukkan dalam Rajah 13.

In 2011, the total of licence applications, approvals issued, certification of RPOs and registration reached 8,485. Approvals issued recorded the highest number at 6,678. The breakdown according to the types of approval is shown in Figure 13.

Aktiviti Bukan Perubatan | Non-Medical Activity

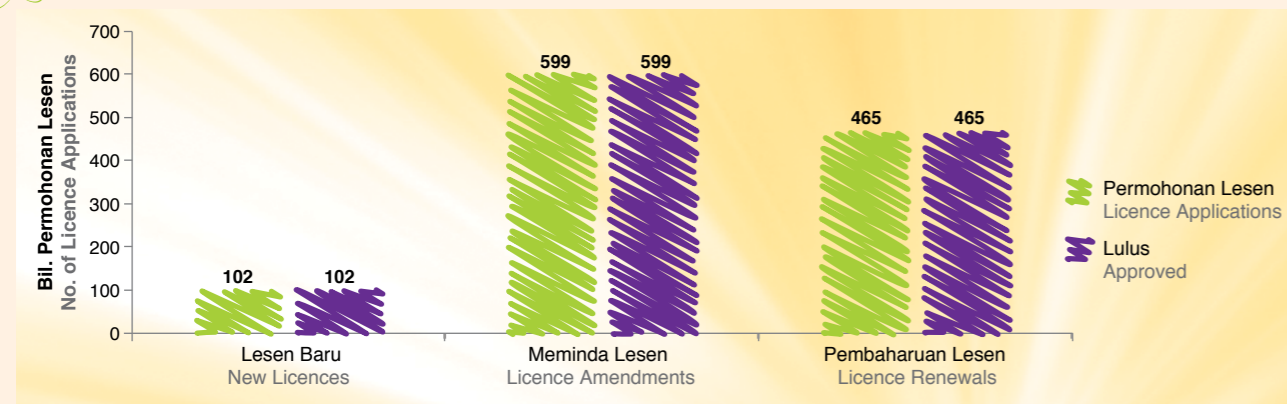
RAJAH FIGURE 14 Pemegang Lesen
Licence Holders



Pada 2011, jumlah pemegang lesen mengikut jenis aktiviti berjumlah 1,092, di mana pemegang lesen tolakan mencatatkan jumlah terbanyak iaitu 661, seperti yang ditunjukkan dalam rajah di atas.

In 2011, the total of licence holders according to the types of activities stood at 1,092, of which licence holders for gauges recorded the highest number at 661, as shown in the figure above.

RAJAH FIGURE 15 Permohonan Lesen
Licence Applications

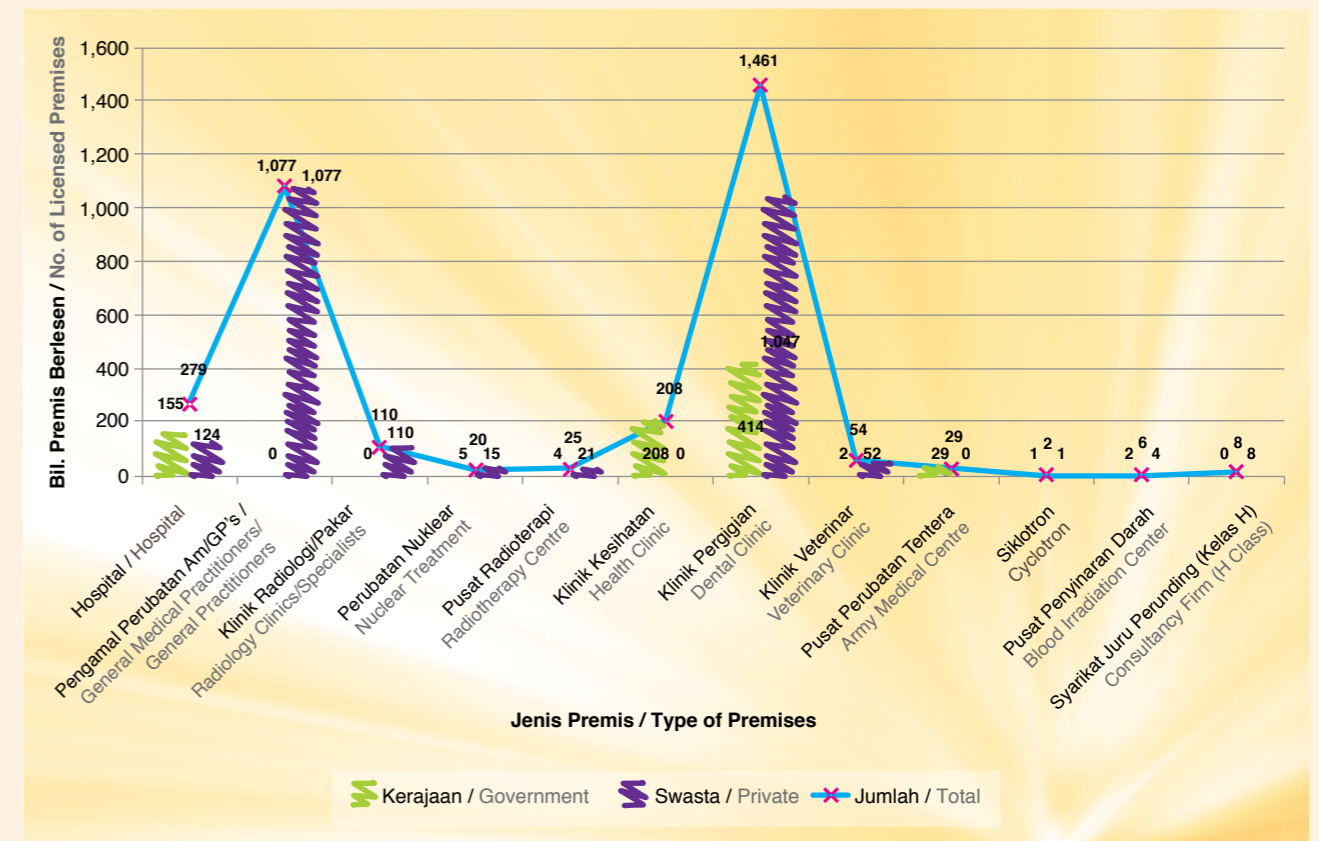


Pada 2011, jumlah permohonan lesen bagi permohonan pembaharuan lesen, meminda lesen dan permohonan lesen baru ialah 1,166 di mana ke semua permohonan lesen telah diluluskan oleh AELB.

In 2011, the total of licence applications for new licences, licence amendments and licence renewals were 1,166 which were all approved by AELB.

Aktiviti Perubatan | Medical Activity

RAJAH FIGURE 16 Statistik Jumlah Premis Berlesen (Swasta) dan Premis Berdaftar (Kerajaan) sehingga 31 Disember 2011
Statistics on the Number of Licensed Premises (Private) and Registered Premises (Government) as at December 31, 2011



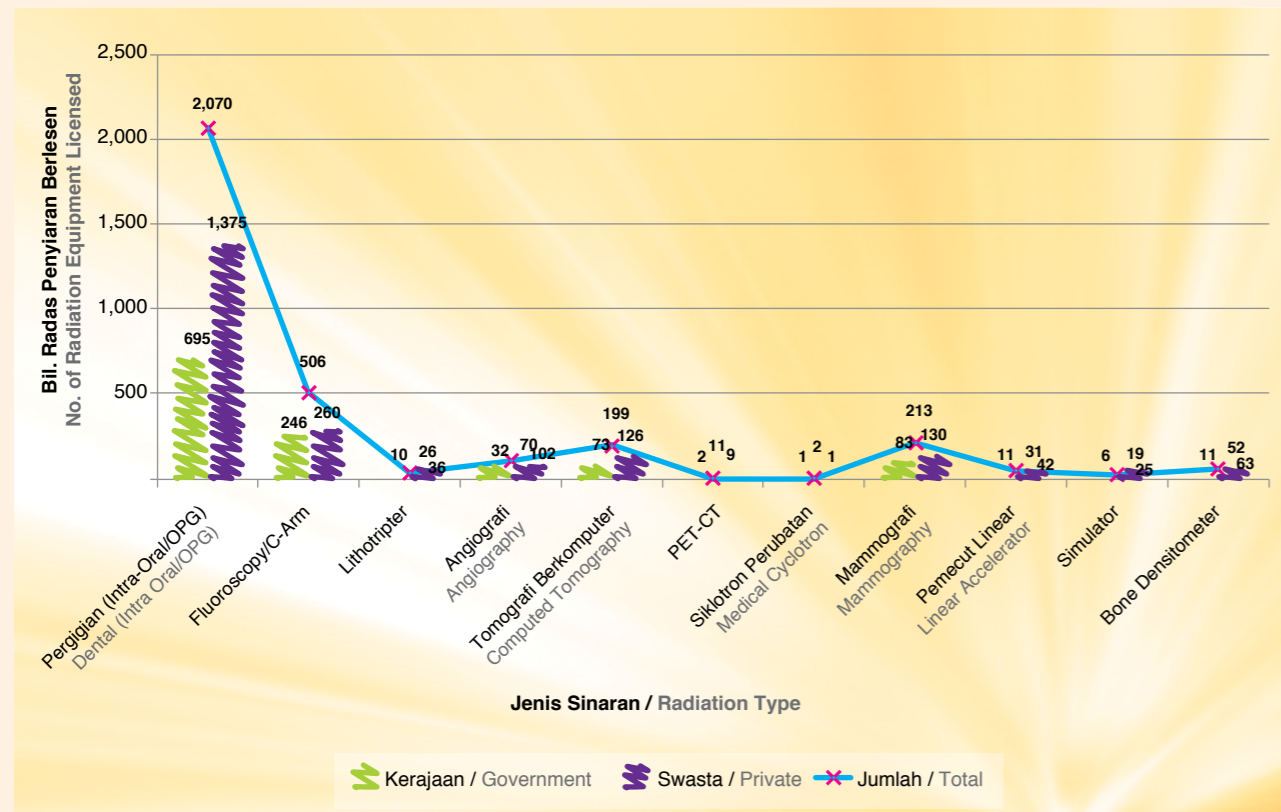
Sumber: Seksyen Keselamatan Sinaran, Kementerian Kesihatan Malaysia

Source: Radiation Safety Section, Ministry of Health, Malaysia.

Jumlah Premis Berdaftar (Kerajaan) dan Premis Berlesen (Swasta) sehingga akhir tahun 2011 ialah masing-masing 820 dan 2,459, menjadikan jumlah keseluruhan premis berlesen di seluruh negara ialah 3,279.

The total of Registered Premises (Government) and Licensed Premises (Private) as at the end of 2011 were 820 and 2,459 respectively, making the grand total of 3,279 licensed premises in the country.

RAJAH 17 Jumlah Radas Penyinaran Mengikut Jenis/Kategori Berlesen/Pendaftaran sehingga 31 Disember 2011
FIGURE 17 Total Radiation Equipment According to Type/Licence Category/Registration as at December 31, 2011



Sumber: Seksyen Keselamatan Sinaran, Kementerian Kesihatan Malaysia

Source: Radiation Safety Section, Ministry of Health, Malaysia.

Pada 2011, jumlah radas penyinaran adalah 6,025 di mana 2,451 radas berada di premis Kerajaan dan 3,574 berada di premis swasta.

In 2011, the number of radiation equipment totalled 6,025 of which 2,451 were located in Government premises and 3,574 in private premises.

RAJAH 18 Kelulusan
FIGURE 18 Approvals

Bil. No.	Jenis Kelulusan yang Diproses Types of Approvals Processed	Bil. Permohonan No. of Applications
1	Bilangan Permohonan Import/Eksport Bahan Radioaktif, Radas Penyinaran dan Bahan Mineral Diproses: Number of Applications for Import/Export of Radioactive Materials, Irradiation Apparatus, Minerals Duly Processed: Import / Import Eksport / Export Pergerakan / Removals	1,643 626 61
2	Pengkelasan Kawasan / Area Classifications	35
3	Bilangan Pinjaman yang Diluluskan: / Number of Approvals for Loans: Radas Penyinaran / Radiation Equipment Bahan Radioaktif / Radioactive Materials	17 25
4	Ubah Lokasi Peralatan Sinaran / Relocation of Radioactive Equipment	71
5	Bilangan Kebenaran Melibatkan Pekerja: / Number of Approvals Relating to Workers: Peminjaman Pekerja Sinaran / Loan of Radiation Workers Pemberhentian Pekerja / Termination of Employment	63 1,613
6	Pembinaan Kemudahan Penstoran (untuk Syarikat yang menjalankan Ujian Tanpa Musnah sahaja) Construction of Storage Facilities (for Non-Destructive Testing Companies only)	36
7	Transit Bahan Nuklear / Transit of Nuclear Substance	0
8	Pengurusan Bahan-bahan Buangan: PELUPUSAN Management of Discarded Materials: DISPOSABLE Bahan Radioaktif / Radioactive Materials Radas Penyinaran / Radiation Equipment Penangkap Kilat Radioaktif / Radioactive Lightning Arrester	440 125 1
9	Pemasangan/Uji/Senggara Radas Penyinaran Installation/Testing/Maintenance of Radiation Equipment	3,877
10	Melakukan Kerja-kerja Radiografi di Kawasan Awam Conducting Radioactive Works in Public Places	39
11	Kemudahan Bilik Dedahan / Exposure Room Facilities	3
12	Pameran/Demonstrasi Peralatan Radioaktif Exhibition/Demonstration of Radiation Equipment	101
13	Pertukaran Alamat Syarikat / Change of Addresses of Companies	25
14	Pertukaran Orang Bertanggungjawab Terhadap Lesen Change of Persons Responsible for Licensing	161
15	Bilangan Pembubaran Lesen / Number of Licences Dissolved	22
Jumlah / Total		8,984

Pada 2011, AELB telah memproses sebanyak 8,984 jenis kelulusan. Kelulusan untuk Pemasangan/Uji/Senggara Radas Penyinaran mencatatkan jumlah terbanyak iaitu 3,877.

In 2011, AELB processed a total of 8,984 types of approvals. Approvals for Installation/ Testing/Maintenance of Radiation Equipment recorded the highest number at 3,877.

RAJAH 19 Statistik Permohonan Kebenaran Pekerja 2011
FIGURE 19 Statistic on Applications for Approvals of Workers 2011

Bil. No.	Keputusan Permohonan Application Results	Lulus Passed	Gagal Failed
1.	Pemberhentian Pekerja Sinaran / Termination of Radiation Workers	1,743	216
2.	Pinjaman Pekerja / Loan of Workers	45	15
3.	Pengiktirafan Khidmat Juruperunding / Service Certification of Consultants	239	9
4.	Pengiktirafan Pembantu Pengendali Sinaran / Certification of Assistant Radiation Operators	399	12
5.	Pengiktirafan Pengendali Pelatih / Certification of Trainee Operators	223	5
6.	Pengiktirafan Pengendali Senggaraan / Certification of Maintenance Operators	227	27
7.	Pengiktirafan Pengendali Sinaran / Certification of Radiation Operators	2,629	41
8.	Pengiktirafan Penyelia / Certification of Supervisors	259	11
9.	Pertukaran Orang Bertanggungjawab Terhadap Lesen Transfer of Persons Responsible for Licences	153	8
Jumlah / Total		5,917	344

Pada 2011, keputusan permohonan seperti pembaharuan, pemberhentian, pinjaman, pensijilan dan pemindahan telah dibahagikan kepada kategori lulus dan gagal. Jumlah bagi setiap kategori adalah 5,917 (lulus) dan 344 (gagal).

In 2011, application results such as for renewals, termination, loan, certification and transfer were broken into the categories of passed and failed. The total for each category was 5,917 (passed) and 344 (failed).

RAJAH 20 Keputusan Peperiksaan PPS Mengikut Aktiviti bagi Tahun 2004-2011
FIGURE 20 Examination Results for RPOs According to Activities for the Period 2004-2011

Tahun Year	Keputusan Results	Tolakan Gauges	Penjualan Sales	NORM/ TENORM NORM/ TENORM	NDT NDT	Pengajaran & Penyelidikan Education & Research	Proses Sinaran Radiation Process	Jumlah Total
2004	Lulus / Passed	206	54	16	16	-	-	292
	Gagal / Failed	167	30	9	23	-	-	229
2005	Lulus / Passed	171	67	15	23	-	-	276
	Gagal / Failed	167	49	21	23	-	-	260
2006	Lulus / Passed	215	36	14	11	-	-	276
	Gagal / Failed	336	46	29	45	-	-	456
2007	Lulus / Passed	200	23	18	10	-	-	251
	Gagal / Failed	314	42	22	41	-	-	419
2008	Lulus / Passed	161	35	11	11	7	7	232
	Gagal / Failed	325	63	38	63	6	3	498
2009	Lulus / Passed	169	26	8	8	4	8	223
	Gagal / Failed	278	53	17	56	0	9	413
2010	Lulus / Passed	106	24	9	8	13	2	162
	Gagal / Failed	295	54	26	30	9	5	419
2011	Lulus / Passed	115	25	8	23	6	6	183
	Gagal / Failed	247	48	19	45	5	3	367

Pada 2011, seramai 550 PPS telah menduduki peperiksaan, di mana seramai 183 telah lulus manakala 367 gagal. Rajah di atas menunjukkan keputusan peperiksaan PPS mengikut kategori dari tahun 2004 hingga 2011.

In 2011, a total of 550 RPOs sat for the examination, of whom 183 passed while 367 failed. The above figure shows the examination results of RPOs according to the various categories from 2004 to 2011.

Penguatkuasaan | Enforcement

RAJAH 21 Pemeriksaan
FIGURE 21 Inspections

Bil. / No.	Pemeriksaan/Serbuan / Inspection/Raid	Pencapaian / Achievements
1	Pemegang Lesen / Licence Holders	512
2	Agensi/Syarikat yang Dikecualikan daripada Perlesenan Agencies/Companies Exempted from Licensing	0
3	Bukan Pemegang Lesen / Non-Licence Holders	0
Jumlah / Total		512

Pada 2011, sejumlah 512 pemeriksaan/serbuan telah dijalankan oleh AELB, di mana kesemuanya adalah pemeriksaan pemegang lesen.

In 2011, a total of 512 inspections/raids, of all were licence holders, were carried out by AELB.

RAJAH 22 Tindakan Perundangan
FIGURE 22 Regulatory Actions

Tindakan Bersabit Peraturan Regulatory Actions	2004	2005	2006	2007	2008	2009	2010	2011
Arahan Henti Operasi Stop Work/Operation Order	25	97	89	57	49	64	97	75
Amaran Bertulis dan Peringatan Written Warnings & Reminders	8	43	71	14	23	26	35	40
Pendakwaan dan Penggantungan Lesen Prosecution & Suspension of Licence	2	0	3	3	0	2	3	0
Penggantungan Pengiktirafan Suspension of Certification	0	0	21	24	18	37	40	36
Siasatan / Investigations	17	23	47	13	31	47	46	31
Jumlah / Total	52	163	231	111	121	176	221	182

Pada 2011, sejumlah 182 tindakan perundangan telah diambil, di mana arahan henti operasi mencatatkan jumlah tertinggi iaitu 75. Rajah berikut juga menunjukkan tindakan perundangan yang telah diambil dari 2004 hingga 2011.

In 2011, a total of 182 regulatory actions were taken, of which stop work/operation order recorded the highest number at 75. The figure above also shows the total regulatory actions taken from 2004 to 2011.

RAJAH 23 Aduan Awam FIGURE 23 Public Complaints

Aktiviti / Activities	Bil. Aduan Diterima No. of Complaints	Tindakan Pemeriksaan AELB Inspection Actions by AELB
Orang Awam / General Public	26	26
Kemalangan Sinaran / Radiation Accidents	0	0
Insiden / Incidents	9	9
Dalaman / In-house	0	0
Jumlah / Total	35	35

Pada 2011, sebanyak 35 aduan awam telah diterima daripada aktiviti yang dijalankan oleh orang awam dan kakitangan dalaman serta aduan mengenai kemalangan sinaran. AELB telah menyelesaikan kesemua aduan dengan mengambil tindakan pemeriksaan.

In 2011, public complaints received from activities carried out by the general public and in-house as well as those that involved radiation accidents totalled 35. AELB solved all these complaints by taking inspection actions.

RAJAH 24 Dos Tahunan Pekerja Sinaran FIGURE 24 Radiation Workers Annual Dose

Dedahan Dos Tahunan (mSv) Annual Dose Exposure (mSv)	Radiografi Industri Industrial Radiography	Aktiviti-aktiviti Lain Other Activities	Jumlah Pekerja Sinaran (PS) Total of Radiation Workers (RW)
0.0	826	9,026	9,852
0.1 – 5.0	675	293	968
5.1 – 18.0	198	10	208
18.0 – 20.0	7	3	10
20.1 – 50.0	55	0	55
>50.1	7	2	9
Jumlah PS / Total of RW	1,768	9,334	11,102
Jumlah Dos / Total of Dose	5,272.25	597.05	5,869.30
	Tahun / Year		Purata / Average
Purata Dedahan Dos (mSv/orang) Average of Dose Exposure (mSv/person)	2004	4.31 mSv	0.28 mSv
	2005	4.19 mSv	0.24 mSv
	2006	4.38 mSv	0.13 mSv
	2007	4.99 mSv	0.59 mSv
	2008	6.04 mSv	0.07 mSv
	2009	6.73 mSv	0.23 mSv
	2010	4.24 mSv	0.15 mSv
	2011	2.98 mSv	0.06 mSv

Pada 2011, pekerja sinaran seramai 11,102, di mana 1,768 adalah PS dalam industri radiografi dan 9,334 dalam aktiviti-aktiviti lain. Purata dedahan dos (mSv/orang) adalah 0.53 mSv. Industri radiografi mencatatkan sebanyak 2.98 mSv manakala aktiviti-aktiviti lain mencatatkan 0.06 mSv.

In 2011, total of RWs were 11,102, of which 1,768 were RWs in the radiography industry and 9,334 were in other activities. Average of dose exposure (mSv/person) was 0.53 mSv. Industrial radiography industry recorded 2.98 mSv while other activities recorded 0.06 mSv.

KATA SINGKATAN

AELB	Lembaga Perlesenan Tenaga Atom
AMEM	ASEAN Ministers in Energy Meeting
ANSN	Asian Nuclear Safety Network
ARE	Asian Rare Earth
BAPETEN	Badan Pengawas Tenaga Nuklir
CBT	Latihan Asas Komputer
CoC	Kod dan Etika
COP	Kod dan Panduan Amalan
DoE	Department of Energy
e-BLESS	Business Licensing Electronic Support System
EBP	Program Bajet Tambahan
eKL	Sistem Perbankan Internet
ERMS	Sistem Pemantauan Radiologi Persekitaran
EUEU	End User Licensing Analysis
ERT	Pasukan Kendalian Kecemasan
IAEA	International Atomic Energy Agency
ICT	Teknologi Maklumat dan Komunikasi
ISE	Integrated Safety Evaluation
JKK	Jawatankuasa Kerja Keselamatan
JKKN	Jawatankuasa Kecil Keselamatan Nuklear
JKKPR	Jawatankuasa Kecil Keselamatan Perlesenan Reaktor Nuklear
JKN	Jawatankuasa Keselamatan Nuklear
KINS	Korea Institute of Nuclear Safety
KKM	Kementerian Kesihatan Malaysia
KPIs	Petunjuk Prestasi Utama
KRAs	Perkara Utama
MBR	Material Balance Report
MNPC	Malaysian Nuclear Power Corporation
MOSTI	Kementerian Sains, Teknologi dan Inovasi
MoU	Memorandum Persefahaman
NPT	Non-Proliferation Treaty
PICC	Pusat Konvensyen Antarabangsa Putrajaya
PIL	Penyenaraian Inventori Fizikal
PIV	Physical Inventory Verification
PKA	Penguatkuasa Pelabuhan Klang
PPS	Pegawai Perlindungan Sinaran
RAD	Radiation
RPS	Program Perlindungan Sinaran
RTC	Regional Training Course
S&T	Sains dan Teknologi
SAR	Laporan Analisis Keselamatan
SOP	Prosedur Operasi Standard
ST	Strategic Thrusts
SSAC	State System of Accounting for and Control of Nuclear Material
ST&I	Sains, Teknologi dan Inovasi
TECDOC	Technical Document
TEPCO	Tokyo Electrical Power Services Co.
TENORM	Technologically Enhanced Naturally Occurring Radioactive Materials
TGs	Technical Groups
TNA	Penilaian Keperluan Latihan
TSO	Technical Support Organisation
UKM	Universiti Kebangsaan Malaysia
VPN	Virtual Private Network

ABBREVIATIONS

AELB	Atomic Energy Licensing Board
AMEM	ASEAN Ministers in Energy Meeting
ANSN	Asian Nuclear Safety Network
ANSTO	Australia Nuclear Service & Technology Organization
ARE	Asian Rare Earth
BAPETEN	Badan Pengawas Tenaga Nuklir
CBT	Computer-based Training
CoC	Code and Conduct
DoE	Department of Energy
COP	Codes of Practice
e-BLESS	Business Licensing Electronic Support System
EBP	Extra-budgetary Programme
eKL	Internet Banking System
EUEU	End User Licensing Analysis
ERMS	Environmental Radiological Monitoring System
ERT	Emergency Response Team
G-SAN	Global Safety Assessment Network
GTRI	Global Threat Reduction Initiatives
IAEA	International Atomic Energy Agency
ICT	Information and Communication Technology
IRAPTER	International Radiological Assistance Training Programme for Emergency Responders
ISE	Integrated Safety Evaluation
JAIF	Japan Atomic Industrial Forum
JAEA	Japan Atomic Energy Agency
JKK	Jawatankuasa Kerja Keselamatan
JKKN	Jawatankuasa Kecil Keselamatan Nuklear
JKKPR	Jawatankuasa Kecil Keselamatan Perlesenan Reaktor Nuklear
JKN	Jawatankuasa Keselamatan Nuklear
JNES	Japan Nuclear Energy Safety Organizations
KINS	Korea Institute of Nuclear Safety
KPIs	Key Performance Indicators
KRAs	Key Result Areas
MBR	Material Balance Report
MNPC	Malaysian Nuclear Power Corporation
MOH	Ministry of Health
MOSTI	Ministry of Science, Technology and Innovation
MoU	Memorandum of Understanding
NNSA	National Nuclear Security Administration
NPT	Non-Proliferation Treaty
PICC	Putrajaya International Convention Centre
PIL	Physical Inventory Listing
PIV	Physical Inventory Verification
PKA	Port Klang Authority
RAD	Radiation
RPA	Radiation Protection Advisor
RPO	Radiation Protection Officer
RPP	Radiation Protection Programme
RTC	Regional Training Course
S&T	Science and Technology
SAR	Safety Analysis Report
SOP	Standard Operating Procedures
ST	Strategic Thrusts
SSAC	State System of Accounting for and Control of Nuclear Material
ST&I	Science, Technology and Innovation
TECDOC	Technical Document
TEPCO	Tokyo Electrical Power Services Co.
TENORM	Technologically Enhanced Naturally Occurring Radioactive Materials
TGs	Technical Groups
TNA	Training Need Analysis
TSO	Technical Support Organisation
UKM	Universiti Kebangsaan Malaysia
US	United States
VPN	Virtual Private Network



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