POST FUKUSHIMA: ENVIRONMENTAL SURVEY AND PUBLIC ACCEPTANCE ON NUCLEAR PROGRAM IN MALAYSIA

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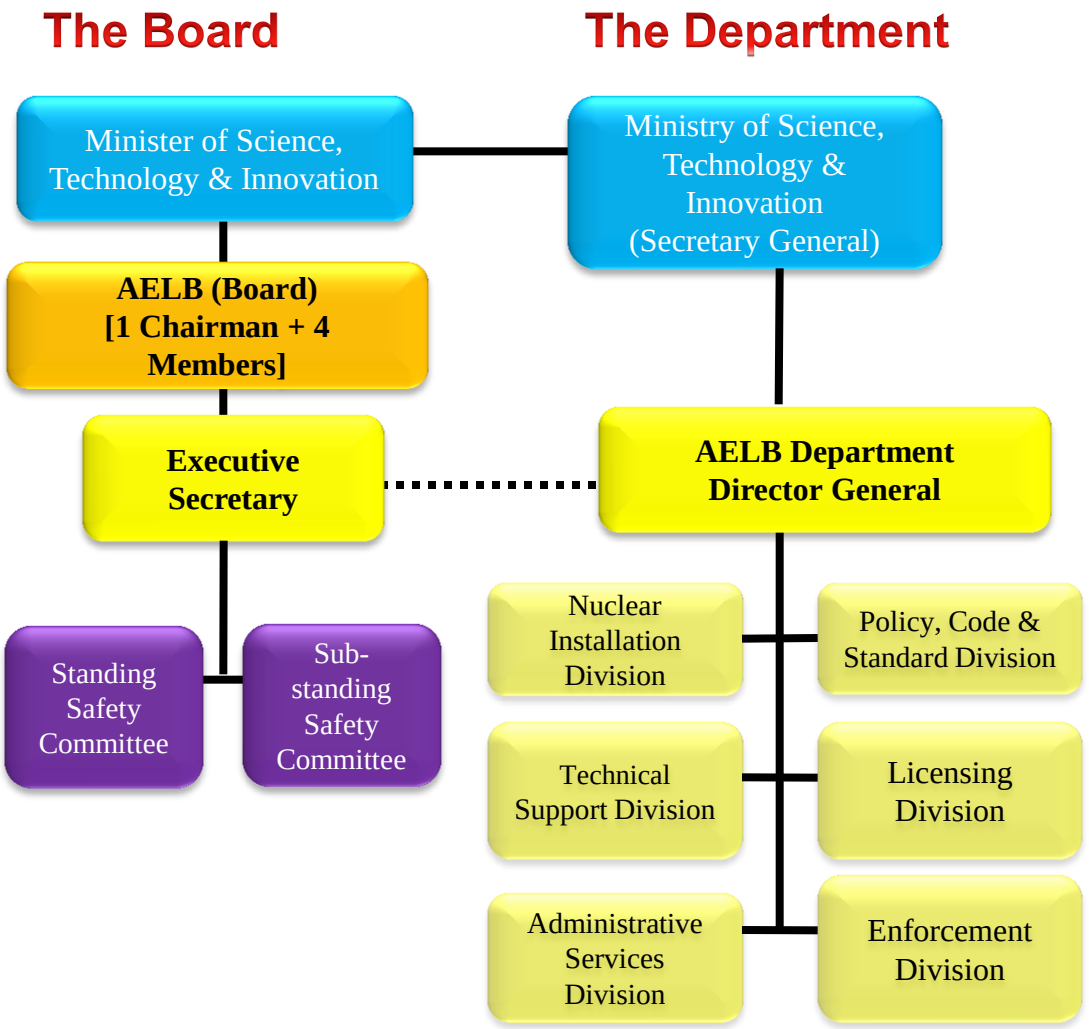
Introduction

Atomic Energy Licensing Act 1984 (Act 304)

- Atomic Energy Licensing Board (AELB) was establish under Section 3 of the Act 304.
- Ensuring safety, security and safeguarding peaceful Nuclear Activities
- For the establishment of standards on liability for nuclear damage.



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ESTABLISHMENT OF AELB

In line with Section 3 of the (Act 304), the Atomic Energy Licensing Board (AELB) was established under the Prime Minister's Department on 1 February 1985. **The functions of AELB** as stated in Act 304 are as follows:

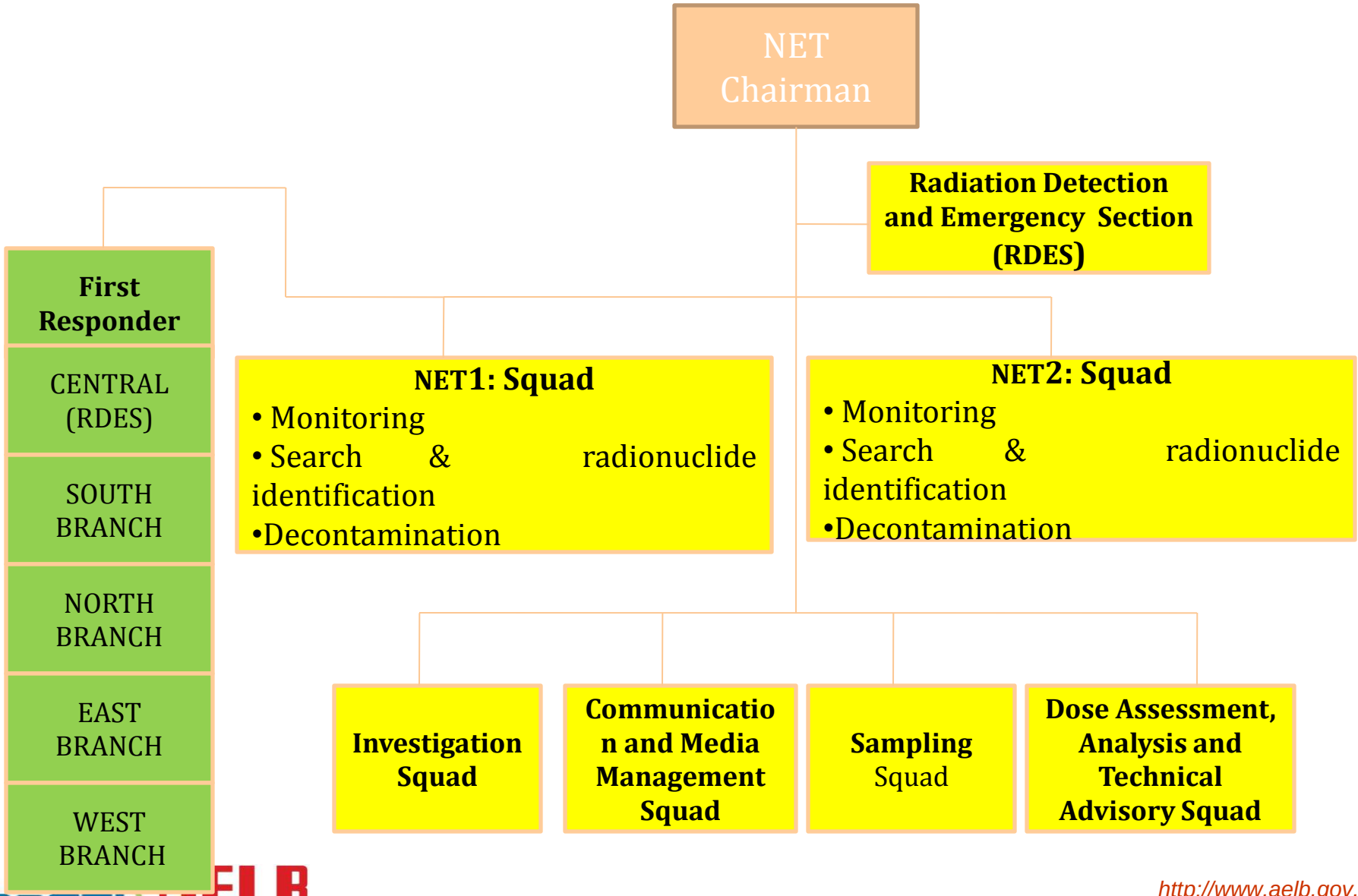
- **To advise the Minister** and the government of Malaysia on matters relating to the Atomic Energy Licensing Act 1984 and developments pertaining thereto with particular reference to the implications of such developments for Malaysia ;
- To exercise and supervision over the production, application and use of atomic energy and matters incidental thereto ; **(Enforce the Act 304)**
- **To establish, maintain and develop scientific and technical co-operation** with such other bodies, institutions or organizations in relation to nuclear matters or atomic energy as the Board thinks fit for the purposes of the Atomic Energy Licensing Act 1984 ;
- Where so directed by the government of Malaysia, **to perform or provide for the performance of 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 ; and
- To do such other things arising out of or consequential to the functions of the 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.

National Radiological Emergency Centre (NREC)

- The National Radiological Emergency Centre (NREC) in AELB's Headquarter will coordinate and supervise any radiological or nuclear emergency events towards the end. The emergency hotline number 1-800-88-7999, was introduced to receive any call from the public or the users for emergency assistance.
- AELB also established a Nuclear Emergency Team (NET) in which becomes the first responder and as an adviser to the on-scene commander. AELB's regional offices are located at all regions of Malaysia, Northern, Southern, Eastern and Sabah/ Sarawak Zone, for immediate response if there is any emergency occur at the respective zone.

EMERGENCY RESPONSE - AELB Nuclear Emergency Team (NET) is the front line to react towards any incident/accident throughout the country. Immediate Response provided by branch offices

Nuclear EmergencyTeam AELB



FACILITIES

The facilities in NREC include:

- Emergency Command Room,
- Operation Room,
- Equipment Room,
- Hostel Room for Responders, and
- Emergency and Monitoring Vehicles
- Monitoring devices/ equipment

- **Emergency Response Centre**

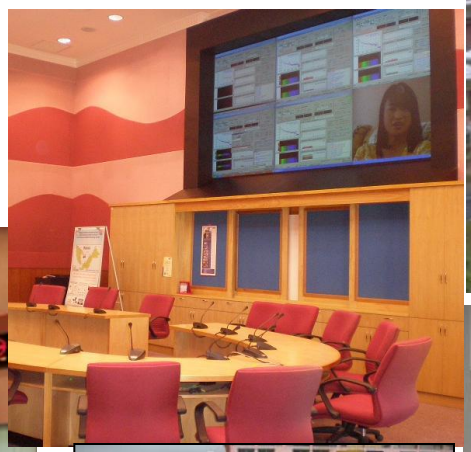
✓ Response Team on duty – 24/7

✓Monitoring and Detection System

✓ Operation Room

✓ Equipment Room

✓ Accommodation



National Radiological Emergency Response Drill

- Mobile Radiation Monitoring

ACTIVITIES

After the Fukushima accident on Mac 2011, the NREC had been operated 24 hours and 7 days to monitor the situation of the nuclear disaster. The center had received numerous numbers of phones called and entertains queries from the public regarding the accident. AELB also provide service to the public such as;

- Advice on radiation protection/status of contamination in Fukushima,
- Radiation screening for those returned from Japan at the airport,
- Media release on the status of the environment and radiation survey, and
- Food stuff monitoring – done by the Ministry of health

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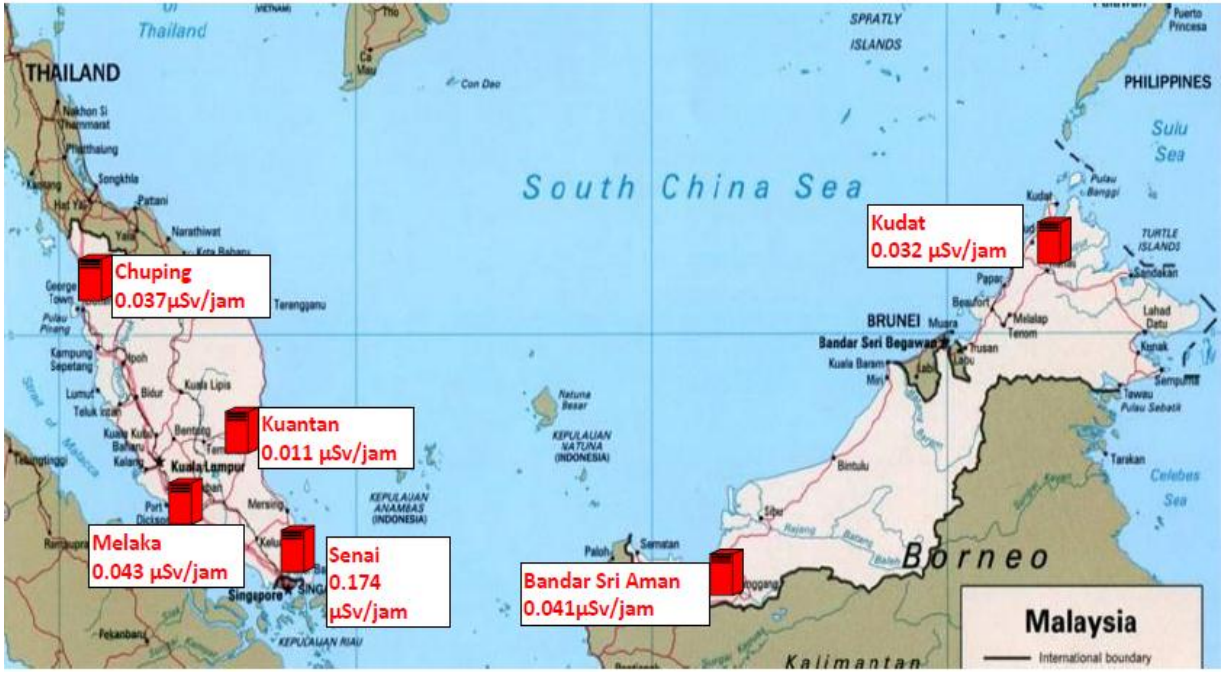
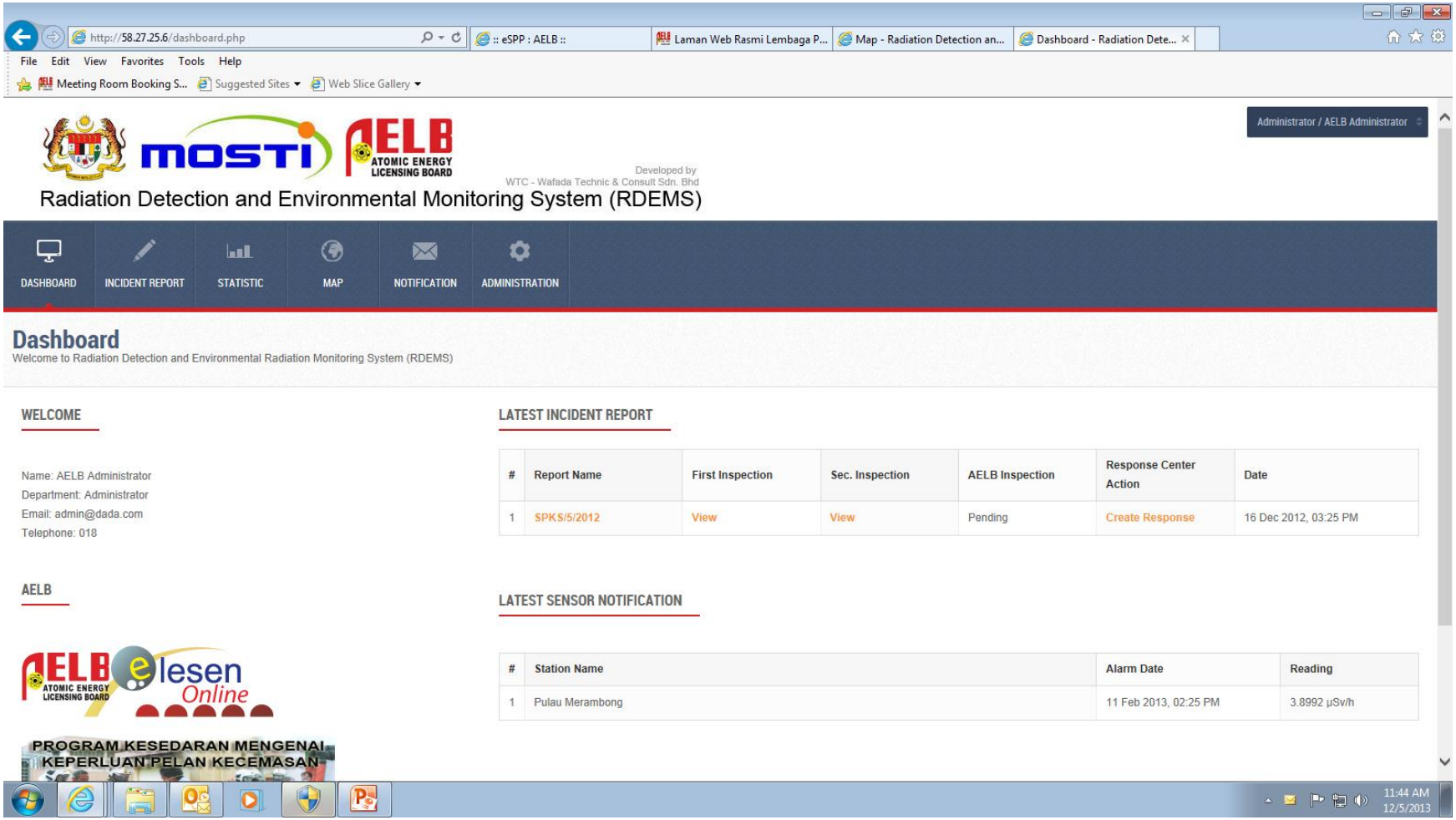
Environmental Radiation Monitoring System ERMS

- ✓ Malaysia have installed ten (10) units of Environmental Radiation Monitoring System (ERMS) throughout the country that gives a detection of early warning sign of trans-boundary radioactivity on the environmental in case of any radiation or nuclear contamination
- ✓ Data from all site are transmitted and monitored at AELB control centre.



ONLINE - RADIATION DETECTION AND ENVIRONMENTAL MONITORING SYSTEM



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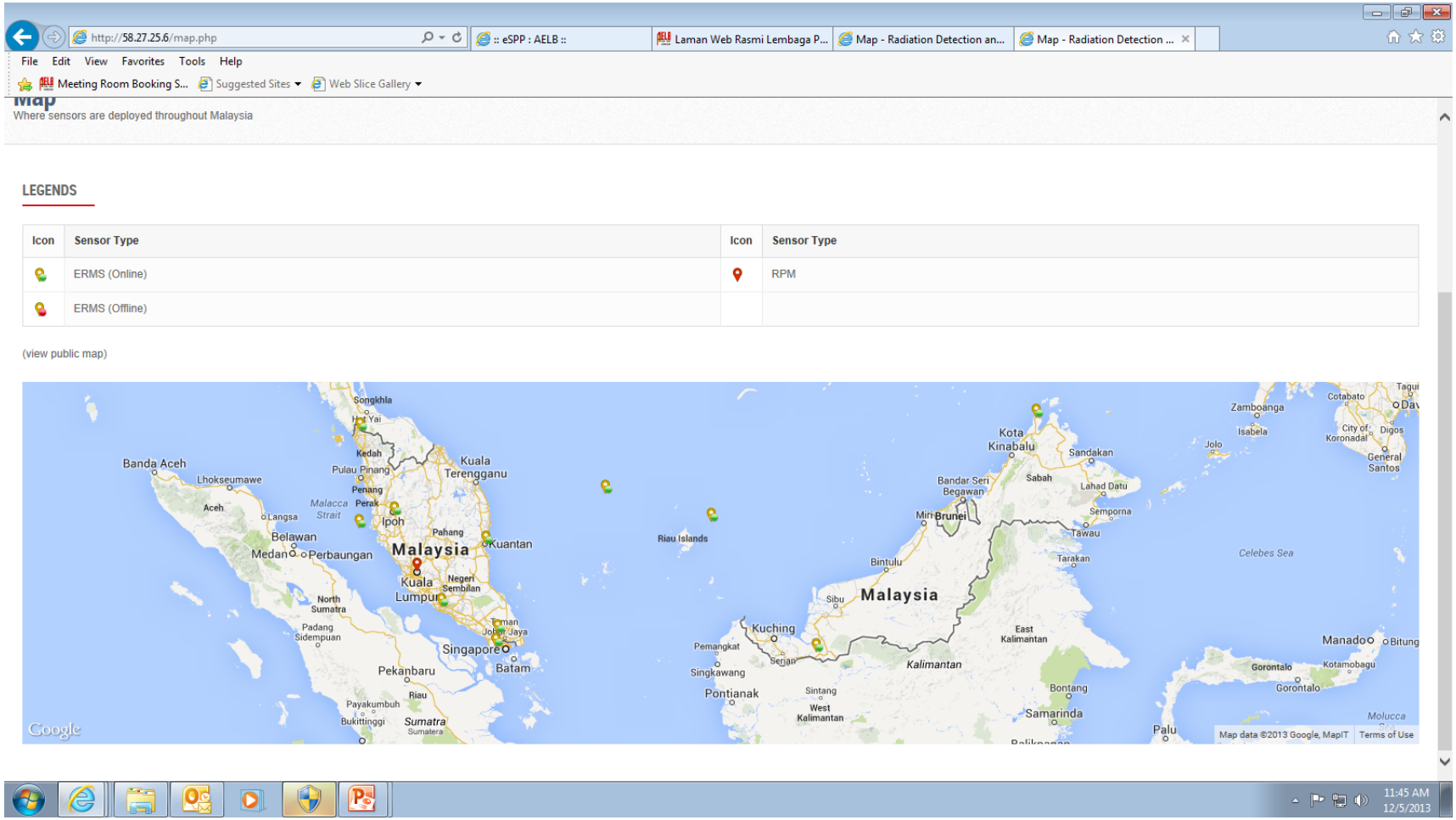
ERMS/ RPM



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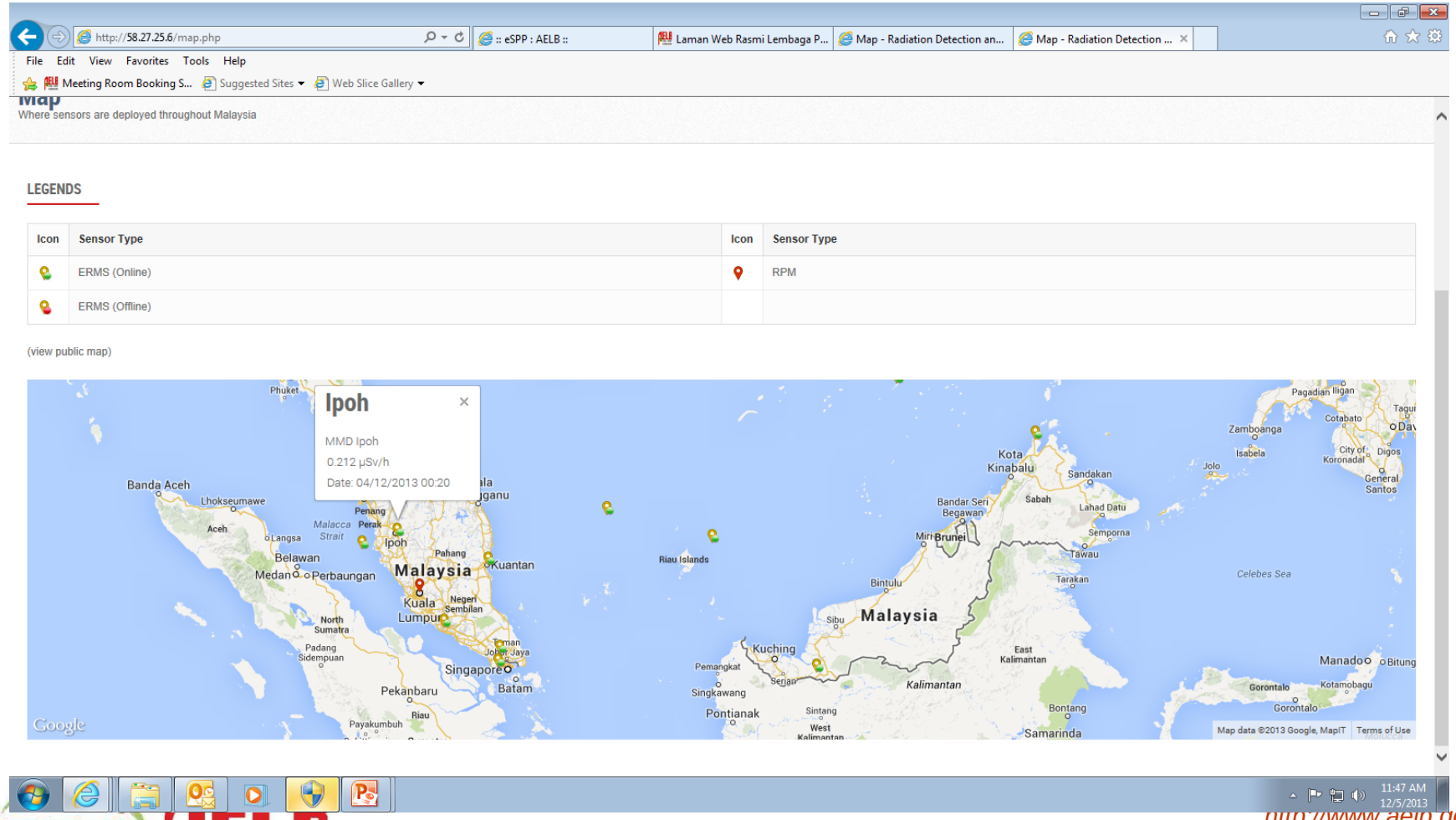
ERMS - IPOH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Map - Radiation Detection an...
Map - Radiation Detection ...
File Edit View Favorites Tools Help
Meeting Room Booking S...
Suggested Sites
Web Slice Gallery
Map
Where sensors are deployed throughout Malaysia
LEGENDS
Icon
Sensor Type
ERMS (Online)
ERMS (Offline)
RPM
(view public map)
Ipoh
MMD Ipoh
0.212 µSv/h
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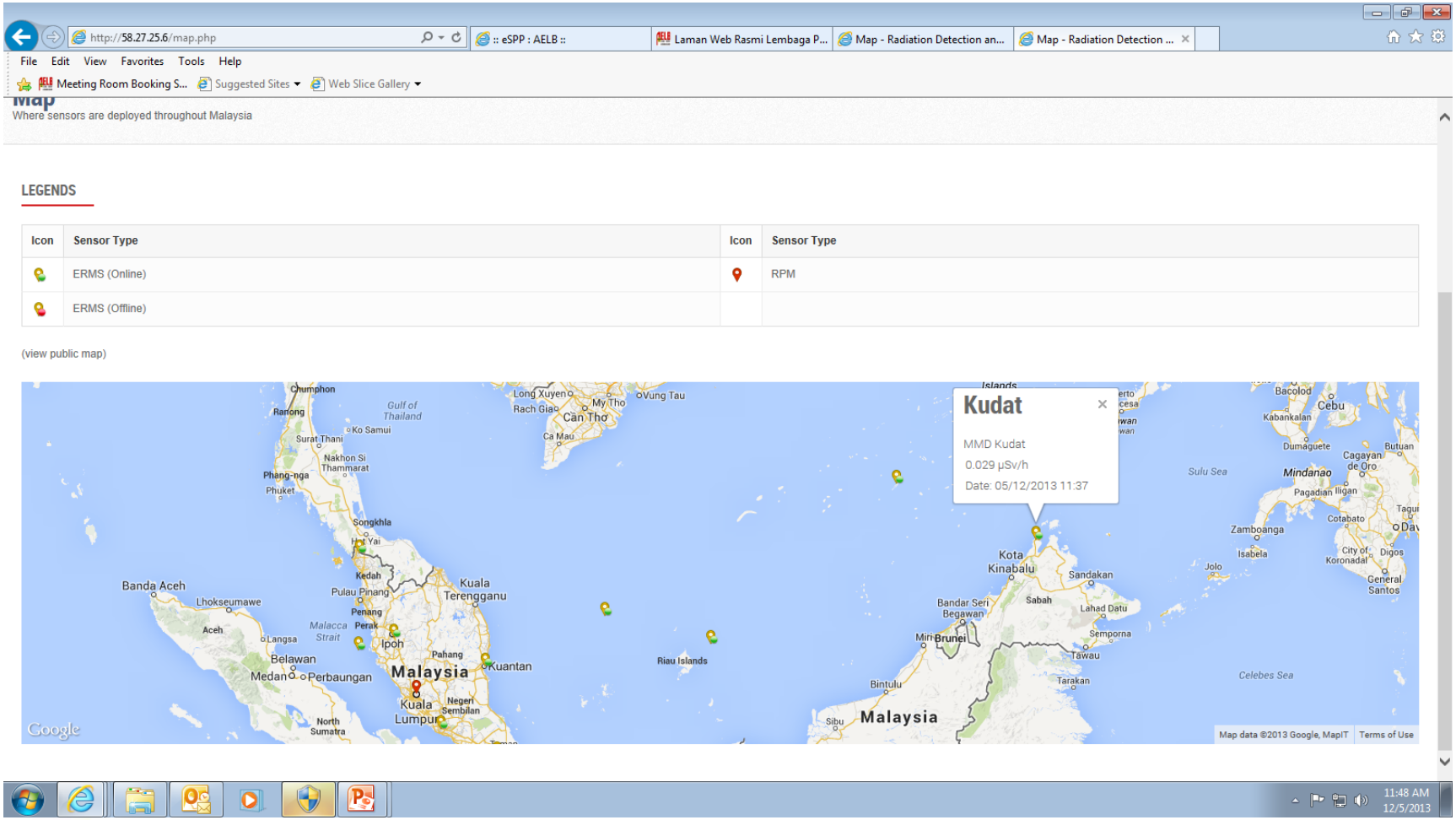
ERMS - KUDAT



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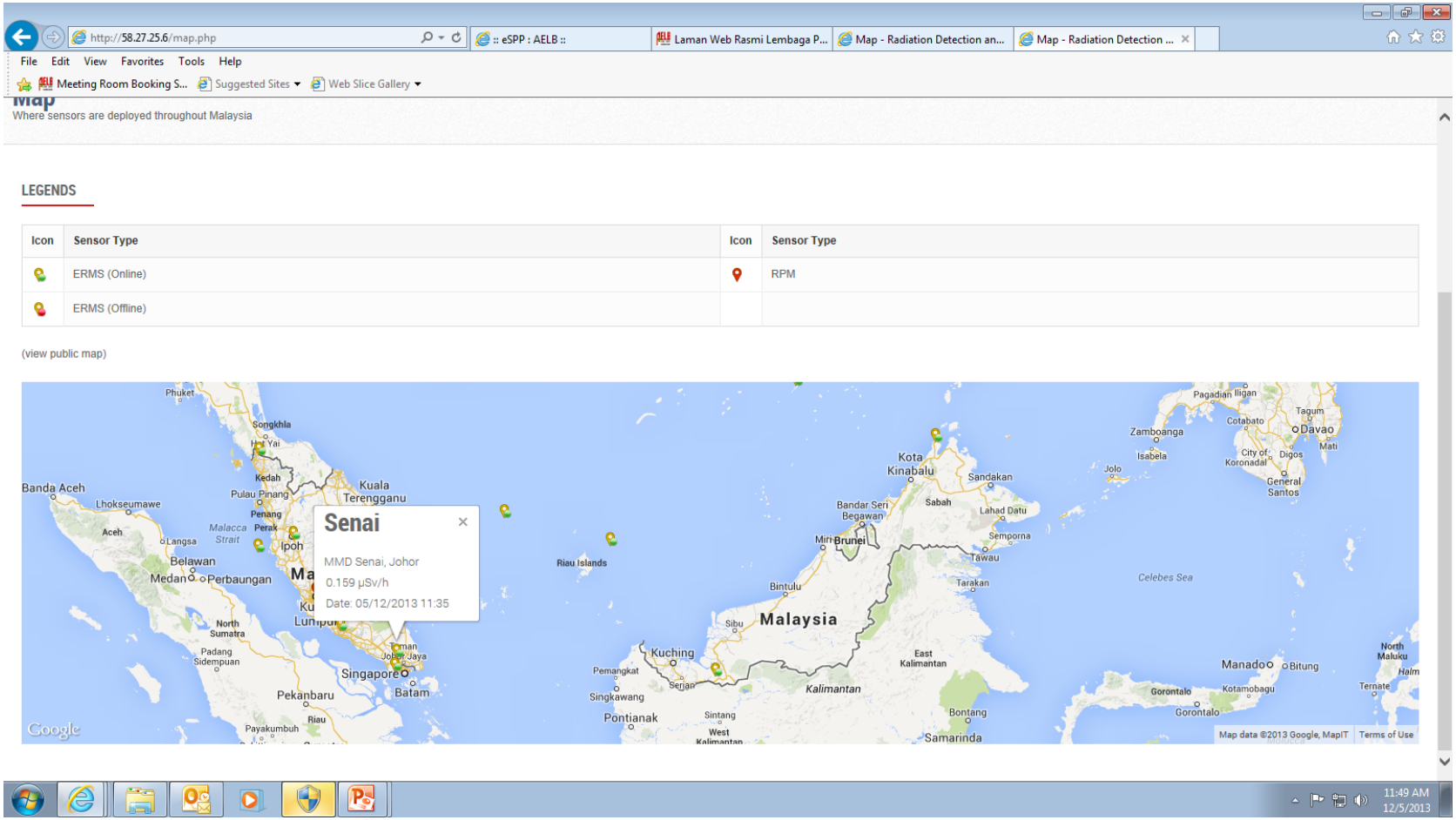
ERMS - SENAI



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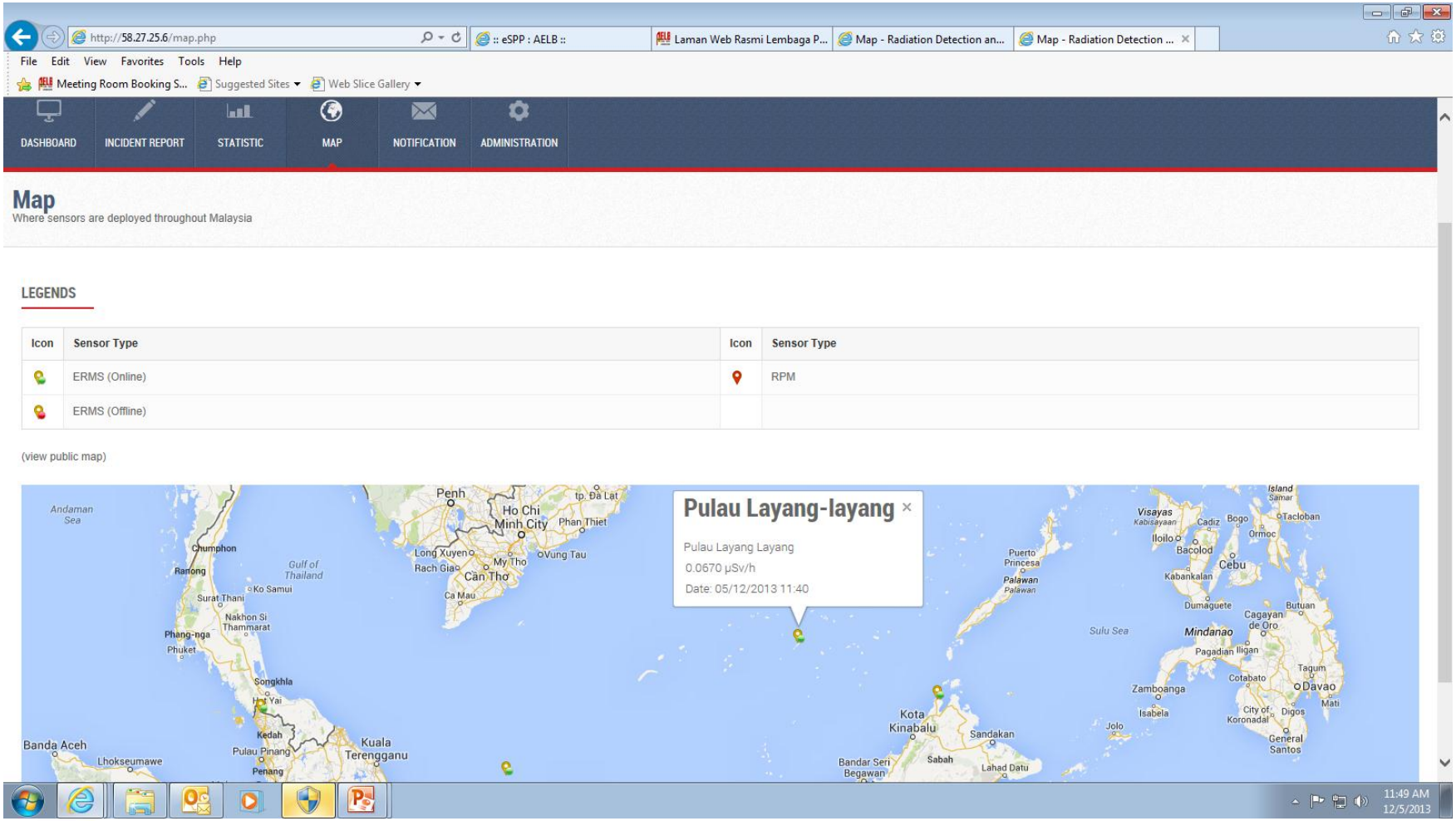
ERMS- P. LAYANG2



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Legislative Infrastructure

The Atomic Energy Licensing Act 1984 (Act 304) is the main Act to provide for the regulation and control of atomic energy, for the establishment of standards on liability for nuclear damage and for matters connected therewith or related thereto. The Atomic Energy Licensing Board (AELB) was than established under Section 3 of the Act 304 on 1 February 1985 to enforce the Act.

AELB has adopted and enforced several Regulations and Order under the Act 304, viz.:

- Radiation Protection (Licensing) Regulations 1986
- Radiation Protection (Transport) Regulations 1989
- Atomic Energy Licensing (Basic Safety Radiation Protection) Regulations 2010
- Atomic Energy Licensing (Radioactive Waste Management) Regulations 2011

Nuclear Program

- NPP had been announced by the government as one of the energy options in Malaysia. Thus, the early preparation towards it had been carried out, by establishment of Malaysian Nuclear Power Corporation (MNPC) in 2011, to study and develop the regulatory infrastructure.
- At the same time AELB in the process of enhancing the human capacity and capabilities towards nuclear program through its HRD, training, attachment etc.

Fukushima accident and it's implication to Malaysia

- Fukushima accident had given great challenges to Malaysia, especially on the planning for NPP program. Misinformation and uncontrolled news spreading had led to increase fear among the members of the public.

- Misunderstanding about nuclear and nuclear related activities had also led to wrong perception to other atomic energy activities used in industrial field, such as rare earth extraction activities from processing of ore containing naturally occurring radioactive material (NORM) had been treated as nuclear activities etc.

LESSON LEARNED

Lesson learned from the Fukushima, AELB had identified that there are few areas to improve, among others;

- To have Standard Operating procedures for emergency response;
- Need more training and emergency drills for staff;
- Need to have sufficient equipment, such as decontamination equipment and facilities
- To deal with the Public Acceptance issues

Changes made to address lesson learned are:

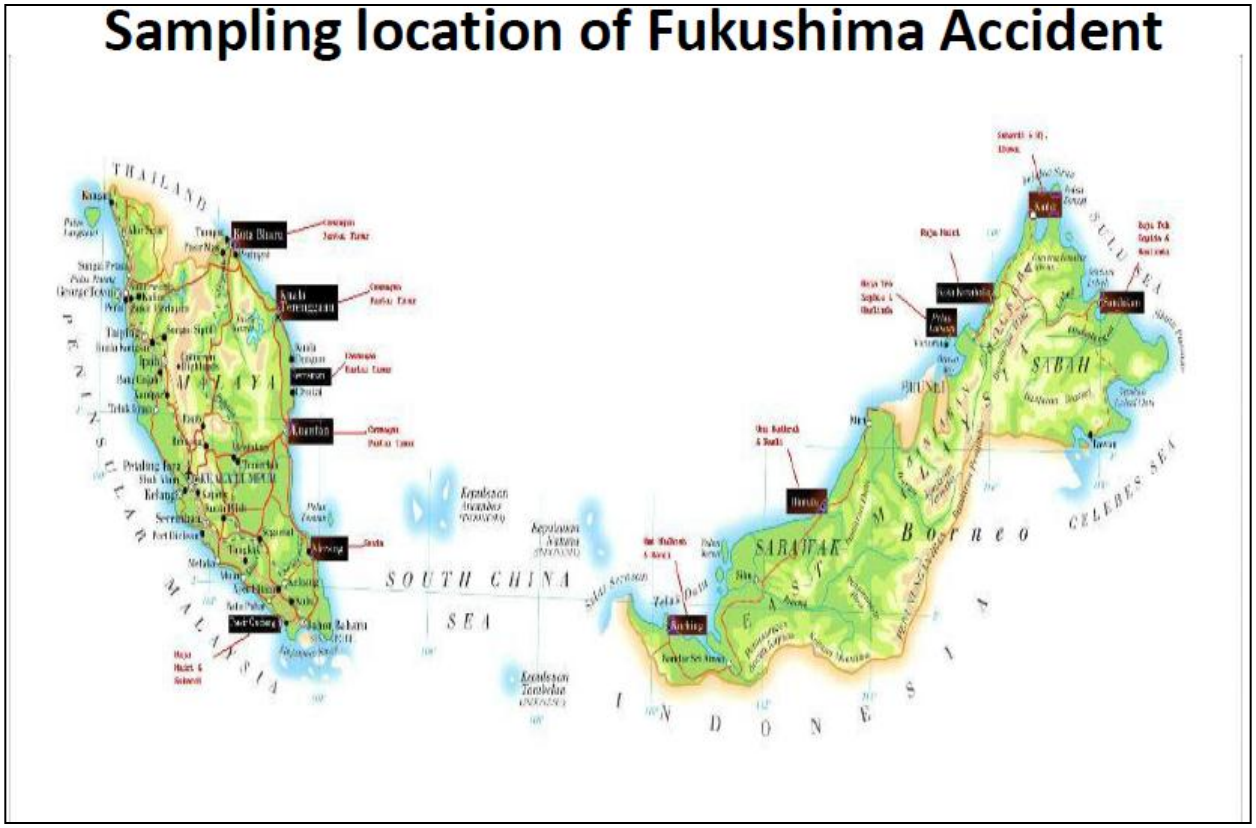
- AELB had enhanced the capabilities of emergency response staffs including the planning for training program;
- AELB had upgraded the monitoring system and facilities; and
- AELB had provided sufficient equipment for emergency response.
- Provide more online information and outreach program for the public

Post Fukushima: Environmental and Public Survey

After the Fukushima accident, activities carried out and services provided by AELB include:

- Environmental sampling and analysis such as air, water and soil to verify the contamination level throughout the country; and
  - The environmental samples such as air, water and soil were collected throughout the country, especially at the boarders' areas. All of the environmental samples were sent to laboratory for analysis, using gamma spectroscopy method. The results of the activity concentration of radionuclides such as Cs-137 and I-31 were published in the AELB's website.
- Radiation protection consultation service, such as
  - Updating the status on the Fukushima accident via mass media.
  - Media release on the latest update status of the accident was issued daily for the first 2 weeks. Later it is released once a week, then once a moth and after few months the media released when there is updated news to share with the public
- Radiation survey service (whole body survey) for those who had returned from Japan;
  - Malaysian citizens who had returned back from Japan (affected areas) are advise to undergo the survey. This was carried out with the support from the Malaysian Nuclear Agency (MNA)
- People can call the NERC that operated 24 hours daily to get latest information on the accident. Public are also encourage to visit the NERC of AELB in order to see how efficient of our equipment and facilities as well as the technology used to monitor the environmental contamination and radiation protection.

During Fukushima accidents, AELB carried out the radiation screening as well as the environmental sampling to provide update and correct information to the public



Post Fukushima: Public Information and Public Acceptance (PIPA) Program

- Indirectly, Fukushima accident also had influenced the decision making process in controlling the atomic energy activities in Malaysia. This also had given big impact on the level of thrust to the regulator in controlling and supervising atomic energy activities, especially related to mineral processing and disposal of radioactive waste containing NORM.

- Thus, AELB have increased its public engagement activities and make it a compulsory to all applicants for mineral containing NORM processing and radioactive waste disposal activities.

Post Fukushima: Public Information and Public Acceptance (PIPA) Program

To overcome this issue, the government had initiated these activities in the licensing and enforcement procedures:

- the public engagement process;
- involvement of other relevant agencies;
- establishment of technical committee as an advisor to the regulator;
- public display of documentations submitted by the applicant to apply for a license dealing with processing of mineral containing NORM;
- invite the IAEA experts and get technical assistant in making decision regarding license application for dealing with processing of mineral containing NORM; and
- following the IAEA standards and international best practices in deciding the license application for dealing with processing of mineral containing NORM and disposal of radioactive waste.

Public Acceptance Committee

- In order to assist AELB in carrying out its public engagement activities, AELB had also established the Public Acceptance Committee. This committee consist of academician, government service officer from various field of expertise such as economist, psychology etc. This is to make sure that public will get right/correct information, reported by media.

PUBLIC ACCEPTANCE CATIVITIES

- Outreach/ Awareness program
  - Outreach program – to the politicians, other governmental officers, industries, school and universities students
  - Awareness program & Public communication - Address Public Concern, Ensure Safety & Health Of The Public, Workers And The Environment

- Public Engagement
  - Media briefing
  - Presentation
  - FAQ (online)

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Conclusion

Fukushima accident had:

- influenced the decision making process in controlling the atomic energy activities related to NPP program, radiation protection as well as the radioactive waste management in Malaysia;
- given big impact on the level of thrust to the regulator in controlling and supervising atomic energy activities in Malaysia;
- increased the public concern/awareness regarding the nuclear and nuclear related activities; and
- made the regulator reviewed the current procedures to include/increase the public engagement activities.

Thank you

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