



# International Symposium on Nuclear Security

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“The Nuclear Security actions taken in Mexico to get an effective protection system of nuclear and radioactive facilities”

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# Objectives:

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Explain the work done by the regulatory body (CNSNS) and the challenges faced:

- Establish a physical protection system on radioactive facilities
- Develop a physical security culture
- Develop the legal framework for security matters



# Introduction

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In 2000 the Mexican nuclear regulatory body started a program to review the security conditions of the nuclear and radioactive installations in the country.

To do this was decided to:

- Review the Mexican legislation on nuclear matters and identify areas that needed to incorporate changes or new regulation
- Evaluate the training needed in nuclear security matters
- Evaluate the security culture level
- Evaluate any change necessary to incorporate in the infrastructure of the regulatory body
- Review the physical protection available at the nuclear and radioactive facilities and identify any weakness



# Inventory of nuclear and radioactive facilities

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- One nuclear power plant with two boiling water reactors
- One research reactor
- Two subcritical facilities
- More than 1000 radioactive facilities



# Main results

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- In general the pp of nuclear facilities was considered acceptable.
- In the radioactive installations the pp was very poor
- The legislation presented some legal voids to cover the nuclear security of the facilities
- Was identified the necessity to initiate a program of capacitating and training in nuclear security for personal of nuclear and radioactive facilities
- The security culture level varied a lot in the facilities



# Program of actions

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## Legislation

- Modify the Reglamentary Law on Nuclear Matters
- Elaborate a regulation code on nuclear security
- Create norms and guides on nuclear security



# Definition of a new Design Basis Threat

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1. Workshop to review the DBT on Nuclear Facilities.
2. Meetings with national intelligence agency to review the DBT for nuclear facilities and for transportation of nuclear material (fresh)



# Training

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- Start a training program for personal at different nuclear and radioactive facilities.
- To look for support of organizations to give the training courses on nuclear security





## Technical cooperative program with IAEA

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1. Latin American Regional Workshop on the Safety of Radiation Sources and the Security of Radioactive Materials; Mexico City, September 2-6, 2002.
2. A Regional Training Course On Physical Protection of Nuclear Facilities and Materials; November 3-14, 2003.
3. IPPAS Mission to Mexico; December 1-11, 2003.
4. Workshop to review the DBT; Mexico City, August 4-6, 2004
5. Regional Training Course on the Physical Protection of Radioactive Sources; August 29-september 1, 2005



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6. National Course on the Physical Protection of Radioactive Sources, April 25-28, 2006.
7. IPPAS Follow-up Mission to Mexico, June 7-14, 2006.
8. Regional Awareness Seminar on Combating Illicit Trafficking of Nuclear and Radioactive Materials at Borders, Mexico city June 27-30, 2006.
9. National Radioactive Source Security Awareness Seminar, February 13-14, 2007.
10. INSServ Mission by IAEA on 8-13 December, 2008

## 8. Graded Approach

- Physical protection requirements are based on a graded approach, taking into account:
  - the current evaluation of the threat
  - the relative attractiveness of the target
  - the nature of the material and potential consequences associated with the unauthorized removal of material
  - potential sabotage against nuclear facilities











# Physical Protection improvements

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- Some changes in access control, new and modern cctv equipment at Central Alarm Station, redesign of pp of interior areas at the Nuclear Plant to the concept vital island.
- Installation of PP equipment at the research reactor area and irradiator location
- Installation of some PP devices at the sub critical assemblies
- Installation of PP equipment at the radioactive facilities with significant quantities of radioactive material



# Cooperative program with DOE of USA

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- On July 23, 2007 was initiated a bilateral cooperation program with DOE of USA to incorporate a PP system at radioactive facilities with significant quantities of radioactive material.
- At this moment has been installed PP systems at 30 facilities





# Measures taken to avoid illicit trafficking

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## Custom controls

There is an agreement between Department of Energy and customs to require an authorization for importation/exportation of nuclear and radioactive materials (june 30, 2007).

## Importation/exportation

**2844.20.01** Enriched uranium in U235 and its composites; plutonium and its composites, alloys, dispersions ( including cermet ), ceramic products and mixtures, that contain enriched uranium in u 235, plutonium or mixtures of these products.

**2844.30.01** Depleted uranium in U235 and its composites; thorium and its composites, alloys, dispersions (including cermet), ceramic products and mixtures, that contain depleted uranium in U235, thorium or mixtures of these products.



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2844.40.01 Cesium 137.

2844.40.02 Radioactive cobalt.

2844.50.01 Reactor spent fuel elements.

2845.10.01 Heavy water (Deuterium oxide)

8401.30.01 Elements Fuel (not irradiated)

9022.21.01 Cobalt bombs



## Measures taken to avoid illicit trafficking

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### Security measures taken in customs

From 49 custom- houses, only 19 are allowed to importation/exportation of nuclear or radioactive material to get a better control.

- The custom authorities have plans to implement radiation detectors on the main entry ports of Mexico: Veracruz, Manzanillo y Tuxpan.



# Security culture

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1. Physical protection courses to all the operative groups responsible of the physical protection (PP) on LVNPP and other nuclear installations.
2. Executive presentations to managers responsible to take decisions related with pp of nuclear facilities
3. Stressing the need to pay the right attention to the importance of protecting the nuclear material and facilities, during the inspections of PP
4. Elaboration of a national security culture law



# Challenges

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- Staff Shortage (Only two persons to perform different tasks)
- Insufficient resources and adequate numbers of trained personnel
- lack of legal assistance to develop the regulations on security
- Radioactive facilities with insufficient funding to implement a physical protection system
- Custom's staff not trained to response to a contingency event which involve radioactive and nuclear material



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- People believe that physical security was not important before the attacks of September 11. Therefore, was not easy to create a physical security culture.
- To create the Security culture was a challenge because in some places was very poor.



# Solutions

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- **Improve the management of technical work in nuclear security tasks and hiring one more person.**
- **Collaborating with law universities to establishing the legal framework for nuclear security.**
- **Bilateral agreement with the DOE to implement the physical security system in radioactive facilities.**
- **IAEA cooperation for training courses (10 courses).**
- **Training courses for custom officials by the regulatory body**
- **Training courses on security culture for different institutions, facilities, managers, technical people, etc.**



# CONCLUSIONS

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- Cooperation and coordination between different state actors is important to achieve a good security level.
- Cooperation between IAEA and state authority is also important to achieve an effective capacity, training and a good security culture level.
- Motivation is a very important element











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The end  
Thanks for your attention!