Introducing ISENDé

ESARDA
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CEA and the Direction des applications militaires

CEA

- 5 Divisions
- 10 Centres
- 9 Directions
- 15,900 workers
- 4,3 G€

DAM

- 51 Programme directorates
- 5 Centres (Operational Directions)
- 4 Functional Directions
- 4,700 workers
- 1,7 G€
CEA/DAM missions

WEAPONS
- Manufacturing and maintenance of operational nuclear warheads
- Dismantling of nuclear warheads after end of service
- Development of future nuclear warheads
- Simulation program
- Basic science and technology studies

NUCLEAR MATERIALS
- Management of nuclear materials for Defense purposes (weapons and nuclear propulsion)
- Clean up of facilities

TREATY MONITORING AND NON PROLIFERATION PROGRAMS

NUCLEAR PROPULSION
- Nuclear steam supply systems for submarines and aircraft carriers
- Ground based facilities

TECHNOLOGICAL DIFFUSION FOR THE BENEFIT OF DEFENSE AND INDUSTRY
ILE DE FRANCE MORONVILLIERS

- Fundamental physics
- Nuclear devices
- Numerical simulation
- Surveillance, environment

Le RIPAULT

- Research on non nuclear materials
- Pyrotechnical devices
- Reentry bodies

GRAMAT

- Vulnerability and Hardening Of weapon systems

CESTA

- Weapon systems architecture
- Security tests
- Simulation experiments
- High energy lasers

VALDUC

- Research on nuclear materials
- Nuclear parts of weapons
- Recycling of nuclear materials

CEA/DAM headquarters ISENDé

ISENDé

DAM - ILE de FRANCE

Moronvilliers

Marcoule Cadarache

Ile Longue

(Antennes DAM)
ISENDé

- ISENDé was created in 2010 as part of CEA / DAM HQ

- The Institut Supérieur des Etudes Nucléaires de Défense has taken over previous organizations
  - **CSAN** created in 1963
    - To teach weapon science (through a Military Engineer School ENSTA)
  - **SIMAN** created in 1965
    - To initiate military personals to nuclear weapons
  - **FSAN** created in 1994
    - To teach weapon science in the context of CTBT and Simulation Program

- Its missions is training, teaching, networking, and strategic studies on all topics relayed to deterrence, non-proliferation and CBRN/E terrorism
Training in nuclear activities at DAM

- DAM has its own Institute for training its staff on sciences and technologies related to its missions

- ISENDé relays mostly on DAM’s experts to give the lectures

- The Core of experts:
  - Research Directors or International experts: 60
  - Senior Experts: 250

- ISENDé provides every year about 40,000 man.hours of courses to 300 students of CEA-DAM with 200 teaching staff

- ISENDé is also involved in training courses organized by other defense organization than DAM: DGA, SGDSN, EAMEA etc…
FSAN-Defense: a high level training course for managers and scientists of the French deterrent forces

• **Objectives**
  - Give a clear overview of the DAM organisation
  - Give a strong knowledge on technological challenges of the Deterrence Strategy
  - Create a strong network between attendees in order to provide them a community where they can exchange and express their views and experience

• **Methods**
  - Presentations
  - Courses
  - Visits of DAM labs, military bases, and industrial facilities
  - Case study (one case for the whole group)

• Each **class** is 12 to 15 with 50% DAM, 25% DGA, 25% Military
• 1 class per year (2 days/month - 9 months)
• Invited **speakers**: senior defense managers, executive directors of CEA, etc…
Non proliferation training course (FCP)

• This course is provided under the supervision of SGDSN.

• The course is intended to alert and give basis to Defense or Civilian personals involved in the counter-proliferation.

• The course lasts 3 weeks plus a series of 11 visits to critical facilities:
  - Each facility visit illustrates typical technologies involved in proliferation.

• The course has up to two sessions per year with 40 to 50 attendees.

• Teaching staff includes experts from CEA, SGDSN, MAEE, DGA, IRSN, DCRI, Ministers of Industry, Finance, Interior….)
Non Proliferation training Course (FCP)

• Actors in proliferation
  - Nuclear and ballistic
  - Biology and chemical

• Counter proliferation
  - Treaties
  - Treaty monitoring and surveillance
  - Intelligence

• Visits of related establishments
  - Biological, chemical and large scientific facilities
    - CEB (Centre d’Etudes du Bouchet)
    - CEA Saclay (Soleil, Osiris)
Non Proliferation training Course (FCP)

- Visits of related establishment
  - Proliferation in the nuclear fuel cycle
    - AREVA Pierrelatte
    - CEA Marcoule
  - Missile proliferation
    - EADS ASTRIUM Les Mureaux
    - SPS Liquid propulsion
    - LRBA navigation guiding
  - Nuclear proliferation
    - CEA/DIF Proliferation Exhibition Hall
    - CEA VALDUC
    - CEA CESTA (LMJ)
Non Proliferation training Course (FCP)

- International relations related to non proliferation
  - AIEA (Vienna)
  - CTBTO - OTICE (Vienna)
Towards a European Training Institute?

- In France IHEDN has received a strategic mission from the Government to promote a European vision on defense training (SERA)

- ISENDé is a privileged partner to IHEDN for all nuclear deterrent and proliferation questions (provide teaching material and professors)

- We propose to organize information seminars (as EC) and training courses on proliferation issues (as FCP) at a European level.

  - The format exists
  - The teaching corpse exists
  - There is a need at European level
  - Participants:
    - Senior government executives/managers
    - International organization personals
    - Directors and senior managers from companies directly linked to sensitive equipment
Thank you for your attention