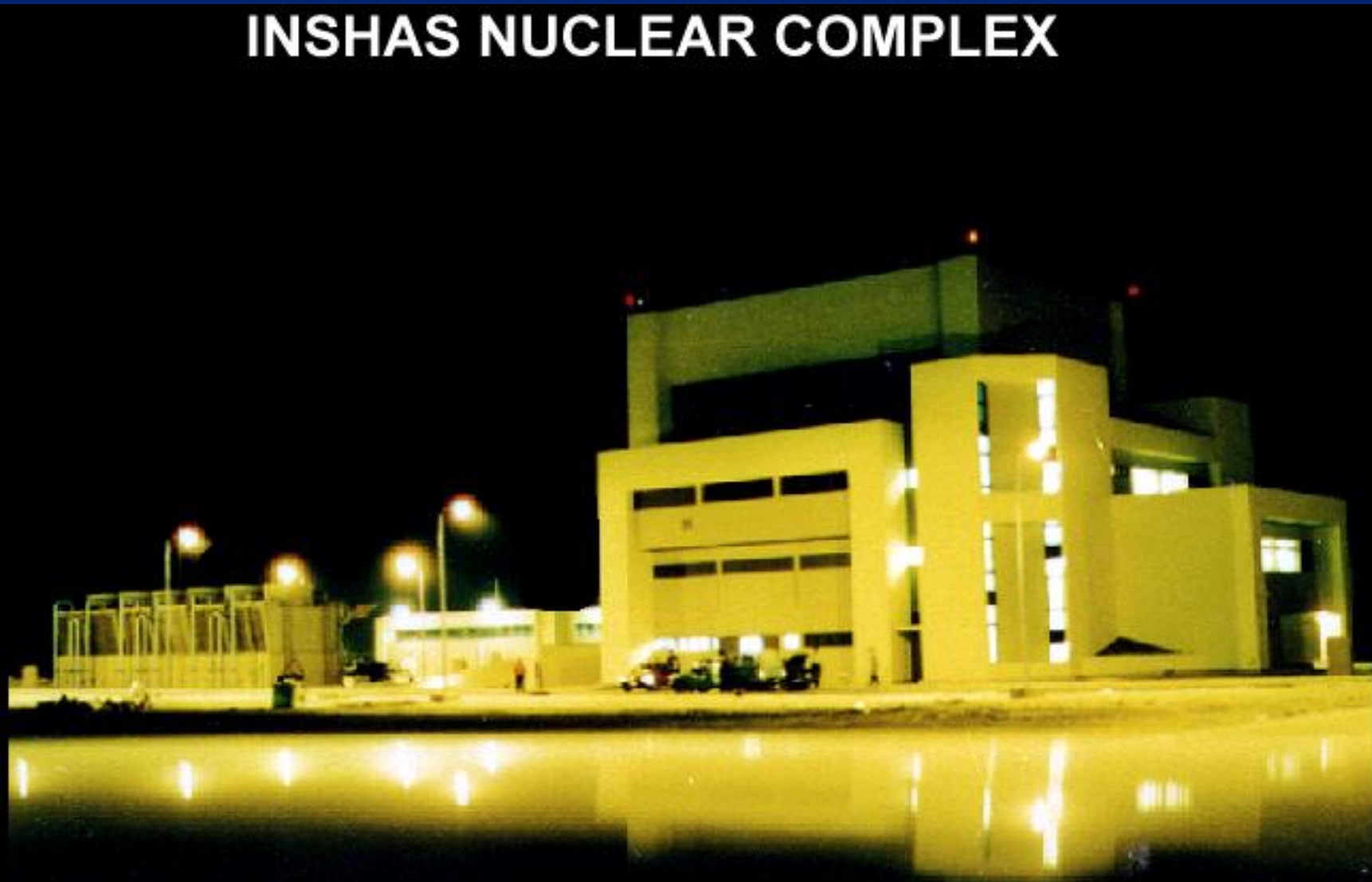


# INSHAS NUCLEAR COMPLEX



**R2D2P Meeting( Transition  
Phase), Sydney, Australia, (12-16)  
Nov., 2007**

**Report on, National Situation  
for Decommissioning Activities  
in Egypt**

By

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Atomic Energy Authority

# 1. Background Information

- Egyptian Atomic Energy Authority (EAEA), was established in 1955. it is responsible about the safe and peaceful uses of nuclear activities. Its organization structure consists of:
  - EAEA Headquarters.
  - Nuclear Research Center (NRC).
  - Hot laboratory and waste management center (HLWMC).
  - National Center for Radiation Research and Technology (NCRRT).
  - National Center for Nuclear safety and Radiation Control (NCNSRC)
- Each center consists of scientific departments and division for R&D.

# 1. Background Information

- The EAEA located in two locations:
  - The first is the Nasr City complex located east of Cairo. It comprises the main headquarters. The National Center for Radiation Research and Technology (NCRRT), and the National Center for Nuclear Safety and Radiation Control (NCNSRC).
  - The second location is the Inshas complex, approximately 40 kilometers northeast of Cairo and includes the Nuclear Research Center (NRC) and the Hot Laboratory and Waste Management Center (HLWMC). The HLWMC was established in 1980 as the Operator of integrated waste management facilities for treatment, conditioning, interim storage and disposal of low and intermediate level waste. The treatment facilities are for low intermediate level liquid wastes, and for incineration and compaction of low level solid wastes.

# 1. Background Information

- The wastes stored in these arise either from the ETRR-1 research reactor or from various institutions such as universities, research institutes, agricultural, oil and other industries, as well as medical applications. In addition there is a disposal facility located at the same site. The Inshas-LILW-shallow disposal facility currently consist of four module engineered structure.

# 1. Background Information

- The National Center for nuclear Safety and Radiation Control (NCNSRC) of EAEEA is the Regulatory Body in Egypt. The Regulatory Body is responsible for licensing of all nuclear operations, so that regulatory oversight is provided by a single national agency. Although the Regulatory Body reports to the Chairman of EAEEA, the licensing process seems to be reasonably well developed and independent.

# 1. Background Information

- Also, EAEA owns two research reactors;
  1. First Research Reactor (ETRR-1):
    - It was commissioned in June, 1960, and was designed and installed by the former USSR. This reactor has the following specifications:
      - **Type** : Tank
      - **Power**: 2MW
      - **Fuel** : EK-10 type with 10% enrichment, and the fuel bundle contains 16 fuel rods, and each rod with length, 60cm, outer diameter, 1cm with cladding of aluminum of thickness 1.5mm.
      - **Coolant, moderator and reflector**: light water.
      - **Utilization**: R&D, isotope production, and beam experiments.

# 1. Background Information

- Several modifications, modernizations and replacements were achieved on the reactor systems to keep the high performance for its utilization.

## 2. second Research Reactor (ETRR-2):

- It was commissioned in November, 1997, and was designed and installation by INVAP Company, Argentina. The reactor has the following specification :



# 1. Background Information

- **Type** : open pool
- **Power**: 22MW
- **Fuel** : Plate type with 20% enrichment.
- **Coolant and moderator**: light water
- **Reflector**: Beryllium blocks.
- **Control**: By control systems (Solid & liquid).
- **Utilization**: R&D, isotope production, NAA, Neutron Radiography, Neutron Transmutation, and Beam experiments.

## 2. Nuclear Policy

- The nuclear policy in Egypt is summarized as follows:
  - Peaceful uses of nuclear activities for:-
    - Isotope production for medical and industrial applications.
    - Research and development.
    - Food reservation and medical equipments sterilization.
    - Waste management and treatment.
  - Strengthen the capabilities of the nuclear safety center.
  - Man power development.
  - More studies for the sites suitable for the construction of nuclear power plants.

## 2. Nuclear Policy

- ❑ Updating and reviewing the Egyptian Atomic Law for controlling and management of nuclear activities.
- ❑ Exchange nuclear information and experience, through conferences, expert mission, workshops, and scientific visits.
- ❑ Strengthening the capabilities in decommissioning activities.

# 3. Decommissioning and Management of Decommissioning Waste

- The following achievements were implemented:
  1. Decontaminating, dismantling and decommissioning of the guide tubes for the ionization chambers and control rods of ETRR-1 reactor.
  2. Dismantling and decommissioning the control circuits and cables responsible about the movement of the control rods, and opening the gate ports at ETRR-1 Reactor.

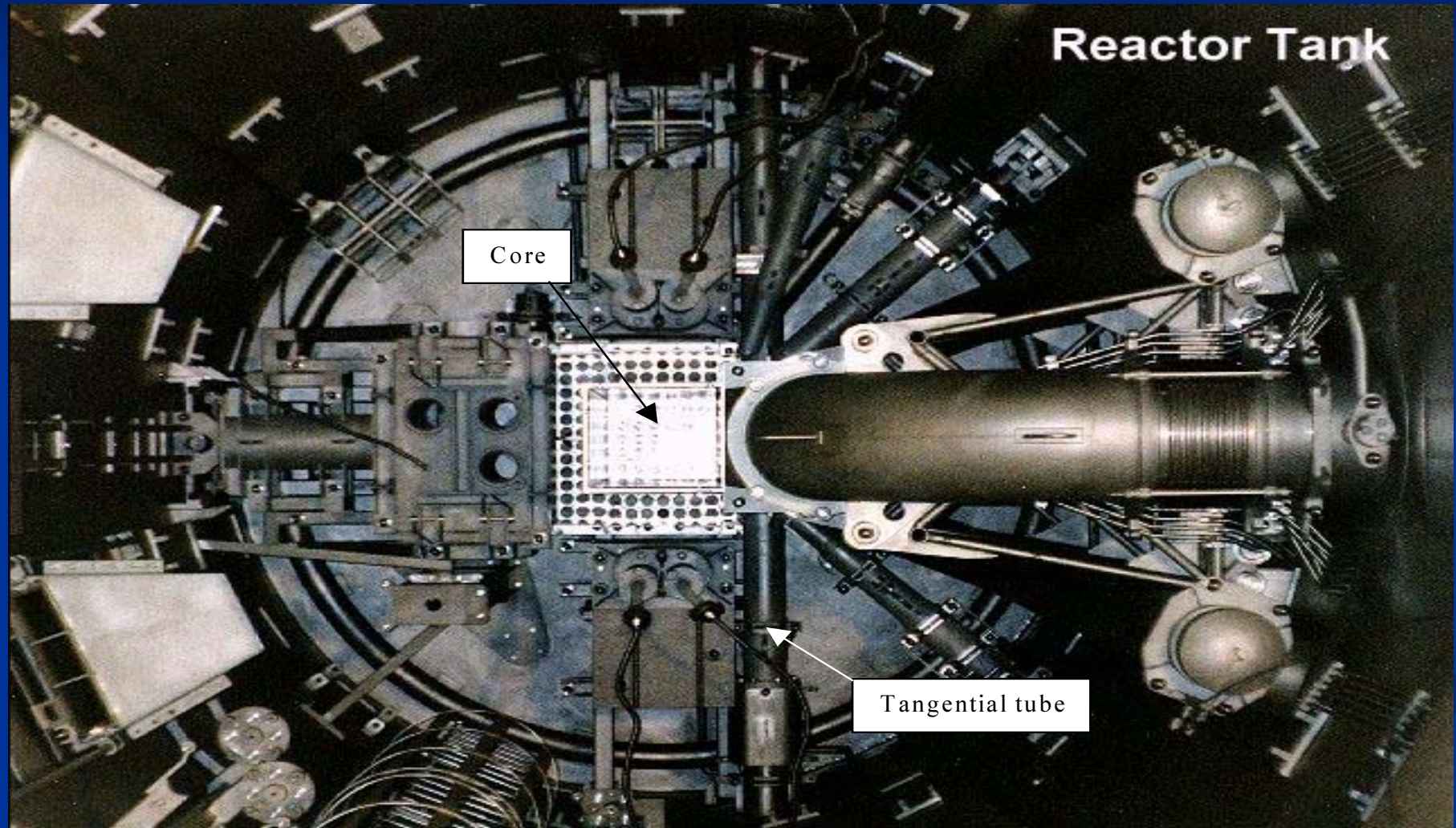
# 3. Decommissioning and Management of Decommissioning Waste

3. Updating the decommissioning plans for the Research Reactors ETRR-1 & ETRR-2.
4. Implementation a training activity in cooperation with IAEA, about Decommissioning of Research Reactors and small Facilities, June,2005,Cairo,Egypt.
5. Implementation a technical cooperation project with IAEA (EGY/3/017) for “management of the storage of liquid and solid waste from the ETRR-1 reactor at Inshass Site”, which started in 2007.
6. Issuing the operational license from our NCNSRC for the liquid waste processing facility.

# 3. Decommissioning and Management of Decommissioning Waste

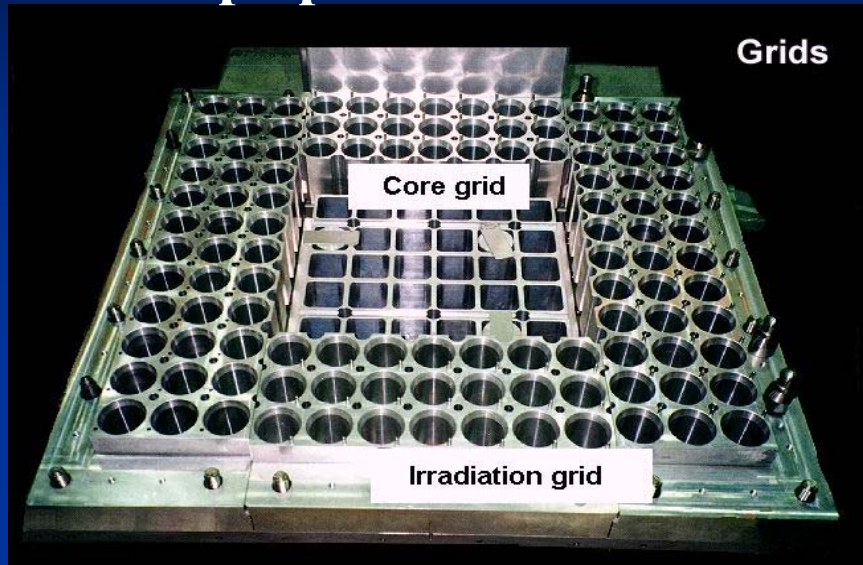
7. Safe handling of the liquid waste from ETRR-1 reactor to the waste management center for treatment using the existing liquid waste processing facility.
8. Sharing in De Sa technical meetings.
9. Sharing in the R2 D2 P meetings.
10. Solid waste generated from the cleaning of ETRR-1 reactor, from medical institutions and spent sources received and stored in the solid waste storage hanger, were segregated, sorting and characterized for further processing in the waste management center.

# Facilities



# The ETRR-2 Facilities

## 1-Isotope production



## 2-Gem stones Production



## 3-Beam Tubes

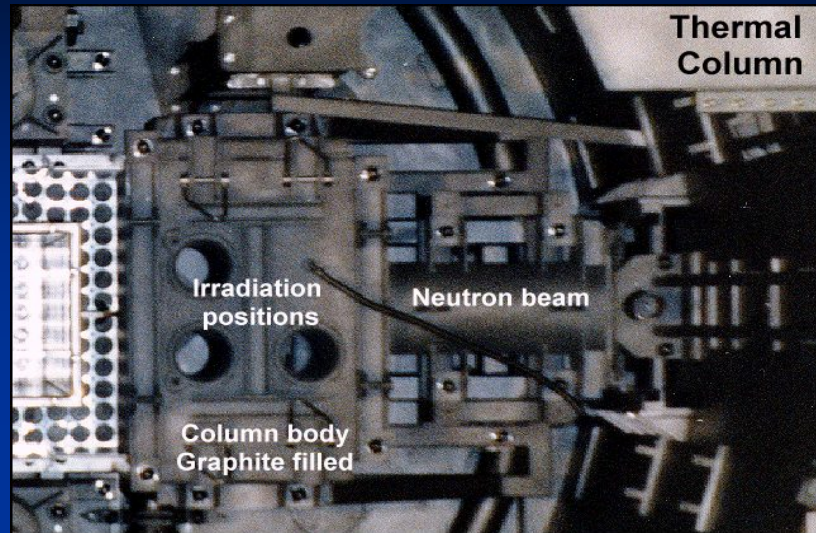


## 4-Semiconductor Production





## 5- NTD Facility



## 6- Pneumatic Tubes (INAA)



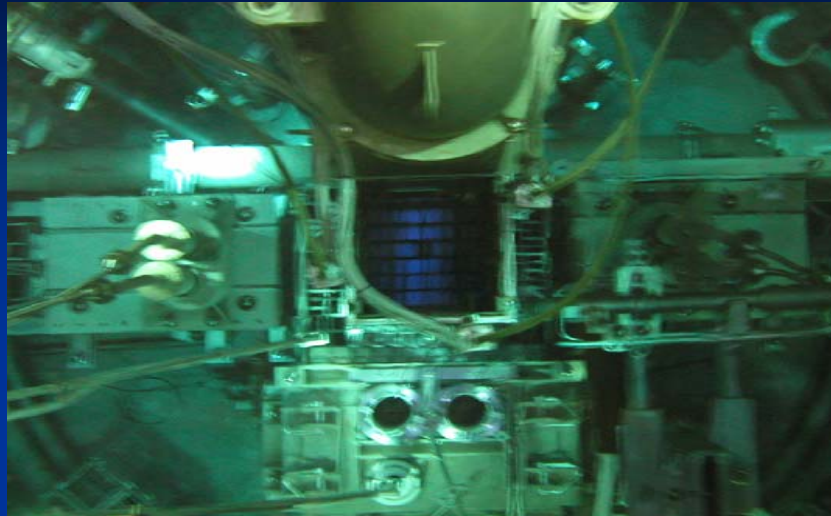
## 7- NAA Lab.



## 8- Neutron Radiography



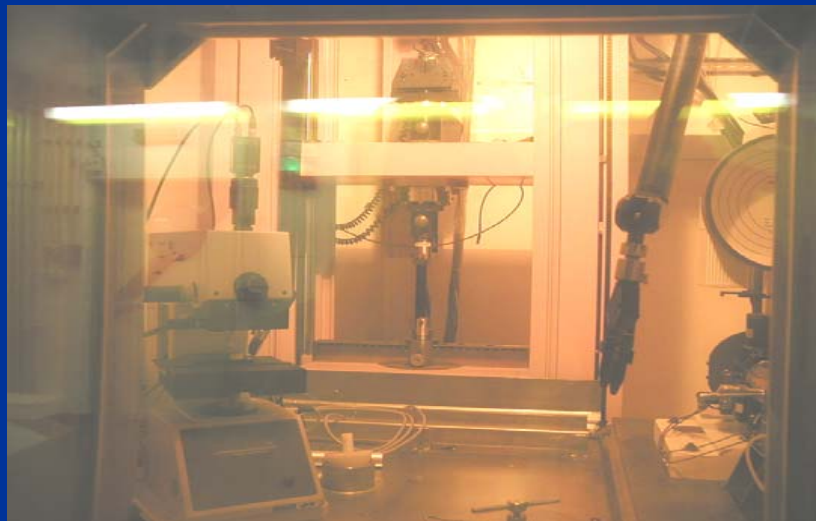
## 9- Underwater Neutron Radiography



## 10- Material Testing Cell



## 11- Impact Machine



## 12- Micro Hardness Tester

